

Grand Canyon National Park Airport

Grand Canyon, Arizona

Chapter 2- Airport Inventory

The inventory, as the initial step in the airport-planning program, is a systematic data collection process that provides an understanding of past and present aviation factors at the Grand Canyon National Park Airport. A comprehensive inventory is used to form the basis for airport recommendations throughout the Airport Master Plan study, as inclusive of the following pertinent airport inventory objectives:

- ✦ An on-site inspection (conducted by the consultant in February 2003) and inventory of airport facilities, equipment, and services to assess existing physical conditions, including the identification of both on and off-airport land uses and the heights of objects for airspace purposes;
- ✦ Discussions with Arizona Department of Transportation (ADOT) officials and airport proprietors and patrons regarding recent airport trends, operational activity, and level of service;
- ✦ The collection of airport activity data, project records, and aeronautical background information, a review of historical airport information, previous airport layout plans, maps, charts, and photographs of airport facilities including a record search and review of local airport-related ordinances, policies, operating standards and lease agreements;
- ✦ The collection of State, regional and County information to understand regional economic conditions, airport development patterns, and land use planning, including visits to surrounding airports to determine the airport service area characteristics;
- ✦ A review of ADOT and County comprehensive planning studies and regulations to understand land use conditions related to aviation and commercial activities including current and planned on and off-airport land use development and property information, surrounding land use patterns, existing and proposed transportation developments, infrastructure, and utilities; and
- ✦ The collection of regional climatic information, including predominate winds, cloud and visibility conditions, and precipitation levels.

Airport Setting

General Airport Information

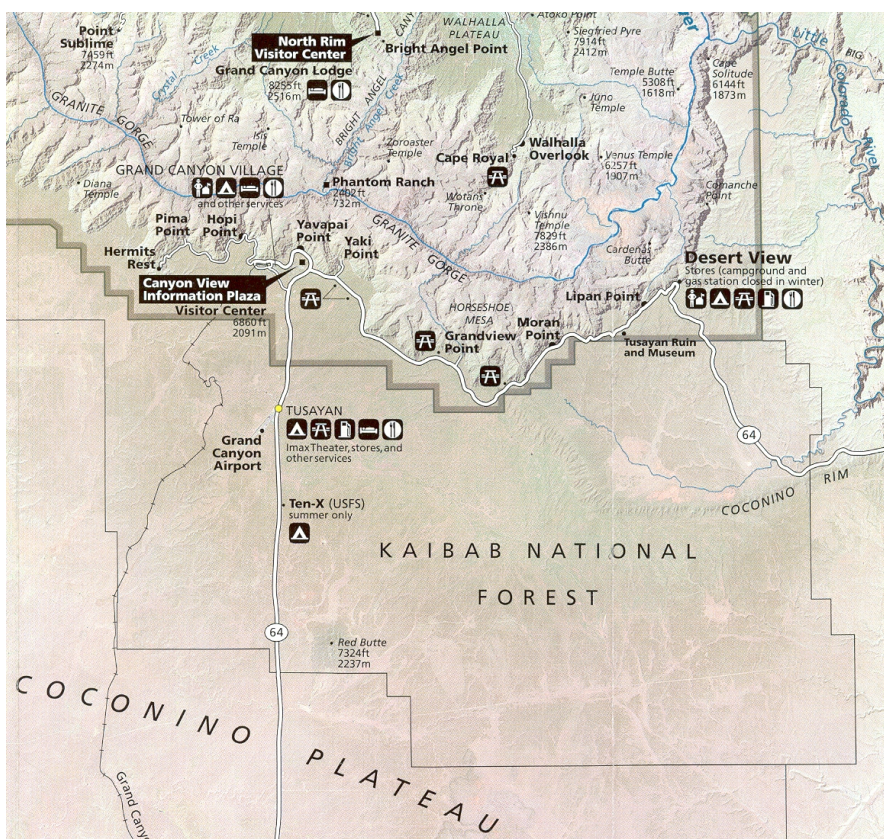
The Grand Canyon National Park Airport (GCN) is situated at a published airfield elevation of 6,608.7' above mean sea level (MSL) while the geographic location of the Airport is published at 35° 57' 08.50" north latitude and 112° 08' 49.10" west longitude. The current magnetic declination for GCN is 12° 30' East (National Geophysical Data Center, 2003). The total acreage for GCN is approximately 859 acres in fee simple ownership.

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Airport Location

The GCN, located within the Kaibab National Forest, is situated south and adjacent to the unincorporated community of Tusayan, Arizona, located in Coconino County. GCN is situated six (6) miles south of the Grand Canyon National Park and is located along Arizona Highway 64. Flagstaff, the Coconino County seat, is located approximately 81 statute miles to the south, the cities of Page and Williams, Arizona are located 146 miles to the northeast and 60 miles to the south, respectively. Phoenix, the state capital, is located approximately 226 miles south of the Airport.



Source: National Park Service, U.S. Department of the Interior, Grand Canyon National Park Guide Map.

Airport Role

The National Plan of Integrated Airport Systems (NPIAS) 1999-2003 identifies the Grand Canyon National Park Airport as a Primary Commercial Service facility. The ADOT, Aeronautics Division State Aviation System of Airports classifies GCN as a Small Hub Commercial Service facility enplaning 0.05% to 0.25% of total U.S. enplanements.



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Based on the application of airport design criteria as specified by the FAA Advisory Circular (AC) 150/5300-13, *Change #7, Airport Design*, and as identified in the Arizona State Aviation Needs Assessment for the Year 2000 (SANS), GCN is a facility having an Airport Reference Code (ARC) classification of ARC C-III.

As a small hub, primary commercial service facility, the Grand Canyon National Park Airport must remain compliant with provisions outlined in Title 14 CFR, Part 139, *Certification and Operations: Land Airport Serving Certified, Scheduled Air Carriers Operating Large Aircraft*. The intent of the Part 139 certification is to ensure that airports accommodating certificated commercial air service achieve the highest possible degree of operational safety and efficiency.

Airport History

The Grand Canyon National Park Airport, constructed during 1963-1965, was developed on property acquired from the U.S. Department of Agriculture, Forest Service. Phased development, initiated in 1967, of the GCN included the construction of a 5,800' x 150' paved runway which included the construction of a 75-foot wide full-parallel paved taxiway, as well as the construction and dedication of the airport terminal building in October of that year. In addition, a paved aircraft parking apron, as well as a paved access road, were constructed during the same period. In 1968, the airport apron was expanded to 28,600 square yards and the airport passenger terminal building was constructed. Four years later, in 1972, the runway and parallel taxiway were expanded to their current length of 8,999 feet.

During 1973 an Aircraft Rescue and Firefighting (ARFF) station was constructed immediately adjacent to the airport parking apron, while in 1974, and again in 1977, the airport parking apron was expanded. During the period from 1979 to 1982, the Airport was equipped with an Instrument Landing System to include a Medium Intensity Approach Lighting System with runway alignment indicator lights (MALSR) allowing precision instrument approach capabilities at the Airport. Finally, in 1986-87, the aircraft parking apron was once again expanded to its current size of 95,600 square yards. Soon after, in 1989-90, an update to the Airport Master Plan was performed and finalized during January of 1991.

Presently, the Airport is undergoing continued growth and expansion including the expansion of the aircraft parking apron by an additional 9,330 square yards located to the south of the terminal area complex. Additionally, a 12,000 square foot joint ARFF/ Snow Removal and Equipment (SRE) facility is being constructed immediately adjacent to the parking apron expansion.

Recent Airport Development

Table 2.1 details major capital development and airport improvement projects at the Grand Canyon National Park Airport occurring during the past ten (10) year period which date

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back to 1991. The information presented includes a summary project description, as well as a project reference number.

Table 2.1
Recent Airport Development History- Closed Projects 1991-2001
Grand Canyon National Park Airport

Year	Project Description	Project Number
1991	GDS Apron Rehabilitation; Access Road and Auto Parking Upgrades; Utility Upgrades; Terminal Building Development (Phase II)	N 105
1992	Land Acquisition Proceedings; Tree Grading/ Removal (Grant 12)/ Terminal Building Upgrades; Apron Rehabilitation; Access Road and Auto Parking Improvements; Utility Upgrades	N 293/ EN 205
1993	Utility Upgrades; ARFF Equipment Acquisition; MIRL Upgrades; MITL Upgrades; Directional Signage Upgrades	EN 305
1994	Utility Upgrades; ARFF Equipment Acquisition; MIRL Upgrades; Directional Signage Upgrades; Apron and Taxiway Rehabilitation	EN 405
1995	ARFF Equipment Acquisition; Apron and Taxiway Rehabilitation (Pavement Preservation)	EN 503
1996	Runway, Apron and Taxiway Rehabilitation (Pavement Preservation)	EN 603
1997	Runway, Apron and Taxiway Rehabilitation (Pavement Preservation); Utility Upgrades	EN 705
1998	Runway, Apron and Taxiway Rehabilitation (Pavement Preservation); Utility Upgrades	EN 822
1999	Utility Upgrades; Access Road (Pavement Preservation) and Auto Parking Improvements; Construct Heliport	EN 905/ E 9055

Source: ADOT, Aeronautics Division, February 2003.

Airport Activity

This section of the airport inventory presents information regarding historic, as well as present, aviation activity at the Grand Canyon National Park Airport. This operational information includes based aircraft, total annual operations, passenger enplanements, and commercial service and general aviation operational activity. It should be noted that the data presented represents a three year period extending back to 1998.

The categories of aviation represented at the GCN include a broad range of aviation operational activity including:

- ✦ Air Carrier
- ✦ Air Taxi/ Air Tour Operators
- ✦ Military
- ✦ General Aviation

Based Aircraft

The GCN currently hosts approximately 52 permanently based aircraft which includes a variety of single and multi-engine piston and turbine powered aircraft, as well as piston and

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turbine powered rotorwing aircraft. **Table 2.2** summarizes the historic number of aircraft, by category, permanently based at GCN since 1998.

Table 2.2
Historic Based Aircraft Activity
Grand Canyon National Park Airport

Year	Single Engine	Multi- Engine Piston	Multi- Engine Turbine	Business Jets	Helicopters	Total Based Aircraft
1998	13	4	0	0	30	47
1999	15	6	0	0	31	52
2000	16	6	2	0	27	51
2001	16	6	2	0	27	51
2002	16	6	2	0	27	51

Source: ADOT, Aeronautics Division, February 2003.

Annual Aircraft Operations

Table 2.3 summarizes the total annual operational activity at the Grand Canyon National Park Airport between 1998 and 2002. This information purports to show that overall annual operations taking place at GCN have slightly declined since the year 1998. Primarily, air carrier, as well as air taxi (air tour) operations have the most appreciable decrease in activity. However, general aviation, including local operations and military air traffic, have remained constant and, in some instances, have increased slightly.

Table 2.3
Annual Aircraft Operations Activity (Tower Operations)
Grand Canyon National Park Airport

Year	Itinerant Operations			Local Operations		Total Annual Operations
	Air Carrier	Air Taxi	Military	General Aviation	GCN	
1998	679	156,958	176	5,338	1,328	164,479
1999	851	160,725	209	5,778	2,425	169,988
2000	155	135,385	360	5,142	1,902	142,944
2001	70	101,439	234	4,728	1,750	108,221
2002	47	88,965	600	5,234	134	97,504

Source: ADOT, Aeronautics Division, February 2003.

Due to the operational significance of air tour businesses and the impact that their respective activity levels have on the Grand Canyon National Park Airport, it is important to highlight those businesses which provide sustained air tour services at the Airport. **Table 2.4** discloses the current air tour operators at GCN, as well as the number of annual operations contributed by each during the period dating back to 1998.

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Table 2.4
Air Tour Business Annual Operational Activity
Grand Canyon National Park Airport

Air Tour Operator	1998	1999	2000	2001	2002
Air Grand Canyon	2,861	1,906	2,943	2,216	2,174
Air Bridge	-	-	910	792	856
AirStar Helicopters	4,448	4,784	5,095	4,049	4,997
Grand Canyon Airlines	3,162	3,282	2,250	3,039	3,217
Kenai Helicopters	4,557	5,462	4,884	2,443	1,575
Papillion Grand Canyon Helicopters	26,264	27,226	26,175	18,593	14,469
Windrock/ Skyeye	172	860	-	-	-
Total Annual Operations	41,464	43,520	42,257	31,132	27,288

Note: Operations conducted by Windrock/ Skyeye for the years 2000-2002 have been combined, for reporting purposes, with Air Grand Canyon total operations during the same timeframe.

Source: ADOT, Aeronautics Division, February 2003.

Passenger Enplanement Activity

Table 2.5 depicts the annual passenger enplanements at GCN for the period from 1998 and 2002.

Table 2.5
Passenger Enplanement Activity
Grand Canyon National Park Airport

Year	Annual Passenger Enplanements			Total
	Large Air Carrier(s)	Commuter/ Small Air Carrier(s)	Nonscheduled/ On-Demand Carrier(s)	
1998	4,728	269,261	480,437	754,426
1999	4,987	304,410	272,991	582,388
2000	4,187	220,636	312,054	536,877
2001	2,452	134,800	284,809	422,061
2002	-	-	-	330,980

Source: ADOT, Aeronautics Division, February 2003.

Airline Service & Commercial Operators

Table 2.6 discloses the existing commercial service operators including those commercial carriers based at the Grand Canyon National Park Airport. The current roster of airline service and commercial operators includes a variety of aircraft mix, as well as aviation services offered at GCN. Most notably, airline operators from as far as Miami, FL and as far east as Bangladesh regularly utilize GCN for various endeavors including vacationing and air tour experiences, as well as aircraft charter services. In addition, the fleet mix represented by these airport users includes piston-powered rotorwing aircraft through 120 passenger, tri-jet commercial aircraft.

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Aside from the current airline and commercial operators utilizing GCN, historic airline service at GCN includes a variety of regional, national, and major air carriers including America West Airlines, Sky West Airlines, Desert Southwest Airlines and United Express.

Table 2.6
Current Airline/ Commercial Service Operators
Grand Canyon National Park Airport

Commercial Service Operator	Headquarters Location	Business Type	Aircraft Type
Air Bridge International, Ltd.	Dhaka, Bangladesh	Air Freight/ Air Charter Services	Twin Engine Commercial
Air Grand Canyon	Prescott, AZ	Air Charter/ Air Tour Services	Cessna T-207
Maverick Helicopter Tours	Grand Canyon, AZ	Air Charter/ Air Tour Services	Aerostar Helicopter
Air Vegas Airlines	Las Vegas, NV	Air Charter/ Air Tour Services	Beech 99
Casino Express	Elko, NV	Casino Air Charter Services	Boeing 737
Grand Canyon Airlines	Las Vegas, NV	Air Charter/ Air Tour Services	DHC-6-300
King Airlines	Henderson, NV	Air Charter/ Air Tour Services	Fixed Wing/ Rotor Wing
Lake Mead Air, Inc.	Lake Mead, NV	Air Charter/ Air Tour Services	Fixed Wing/ Rotor Wing
Miami Air International	Miami, FL	Air Charter Services	Boeing 727/ Boeing 737
Scenic Airlines	Las Vegas, NV	Air Charter/ Air Tour Services	DHC-6-300
Papillion Grand Canyon Helicopters	Las Vegas, NV	Air Charter/ Air Tour Services	Bell/ Aerostar Helicopters
Southwest Safaris	Sedona, AZ	Vacation Services	n/a
Sunrise Airlines	Page, AZ	Air Charter/ Air Tour Services	Jetstream 31
Tucson Aero	Tucson, AZ	Air Charter/ Air Tour Services	unk.
Vision Air	Las Vegas, NV	Air Charter/ Air Tour Services	Fairchild-Dornier 228
Westwind Aviation	Phoenix, AZ	Air Charter/ Air Tour Services	Cessna 208 (Caravan)

Source: ADOT, Aeronautics Division, February 2003.

Airfield/ Airside Facility Inventory

Exhibit 2.1 depicts the existing airport facilities at Grand Canyon National Park Airport. Table 2.7 describes the major airfield facilities and equipment along with a corresponding assessment of physical conditions based on a February 2003 physical site inspection of the Airport.



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*Table 2.7
Existing Airfield/ Airside Facilities
Grand Canyon National Park Airport*

Airfield Item	Physical Description	Physical Condition
Runway Facilities & Equipment		
RUNWAY 3-21 Runway Surface	8,999' x 150' (Portland Cement Concrete- PCC)	Good
	88,000 pounds (SW- single wheel gear)	Good
	108,000 pounds (DW- dual wheel gear)	Good
	160,000 pounds (DTW- dual tandem wheel gear)	Good
True Runway Bearing Pavement Markings Runway Lighting	40.65°/ 220.65° True (Source: ANA Survey, 05/1997)	
	Precision Instrument (PIR)	Good
	Medium Intensity Runway Lighting (MIRL)- ATC/ Pilot Controlled	Operational
	Medium Intensity Approach Lighting System w/ RAILS (MALSR)- Rwy 3	Operational
Visual Approach Aids	REIL- Rwy 21, ATC/ Pilot Controlled	Operational
	VASI-4L- Rwy 21, ATC/ Pilot Controlled	Operational
Taxiway Facilities & Equipment		
Taxiway A	200' x 75' (PCC Runway 21 End; Entrance Taxiway; MITL	Good
Taxiway B	287' x 75' (PCC)- Runway 21 End; Entrance Taxiway; MITL	Good
Taxiway C	287' x 75' (PCC)- Runway 3-21 Connector Taxiway; MITL	Good
Taxiway D	430' x 75' (PCC)- Runway 3-21 High Speed Exit Taxiway; MITL	Good
Taxiway E	287' x 75' (PCC)- Runway 3-21 Connector Taxiway; MITL	Good
Taxiway F	287' x 100' (PCC)- Runway 3-21 Connector Taxiway; MITL	Good
Taxiway G	287' x 107' (PCC)- Runway 3 Entrance Taxiway; MITL	Good
Taxiway P	8,999' x 75' (PCC)- Runway 3-21 Full-Parallel Taxiway; MITL	Good
Additional Airfield Items		
Airport Beacon	Located atop the new ATCT	Operational
Terminal VOR (TVOR)	Located approx. 2,660' W of Rwy 21 End	Operational
ASOS	Co-located with Glideslope Antenna 1,000' NE of Rwy 3 End	Operational
Glideslope Antenna	Co-located with ASOS 1,000' NW of Rwy 3 End	Operational
Localizer Antenna	Located 1,000' NE of Rwy 21 End	Operational
Weather/ Wind		
Detection Equipment	(3) Arrays- Rwy 3 End, Mid Field and Rwy 21 End	Operational
Airport Electrical Vault	Located approx. 5,400' NE of Rwy 3 End	Operational
Segmented Circle/		Good
Lighted Wind Indicator	Located 645' NW of Rwy 21 End; Wind Cone at Rwy 3 End	Good

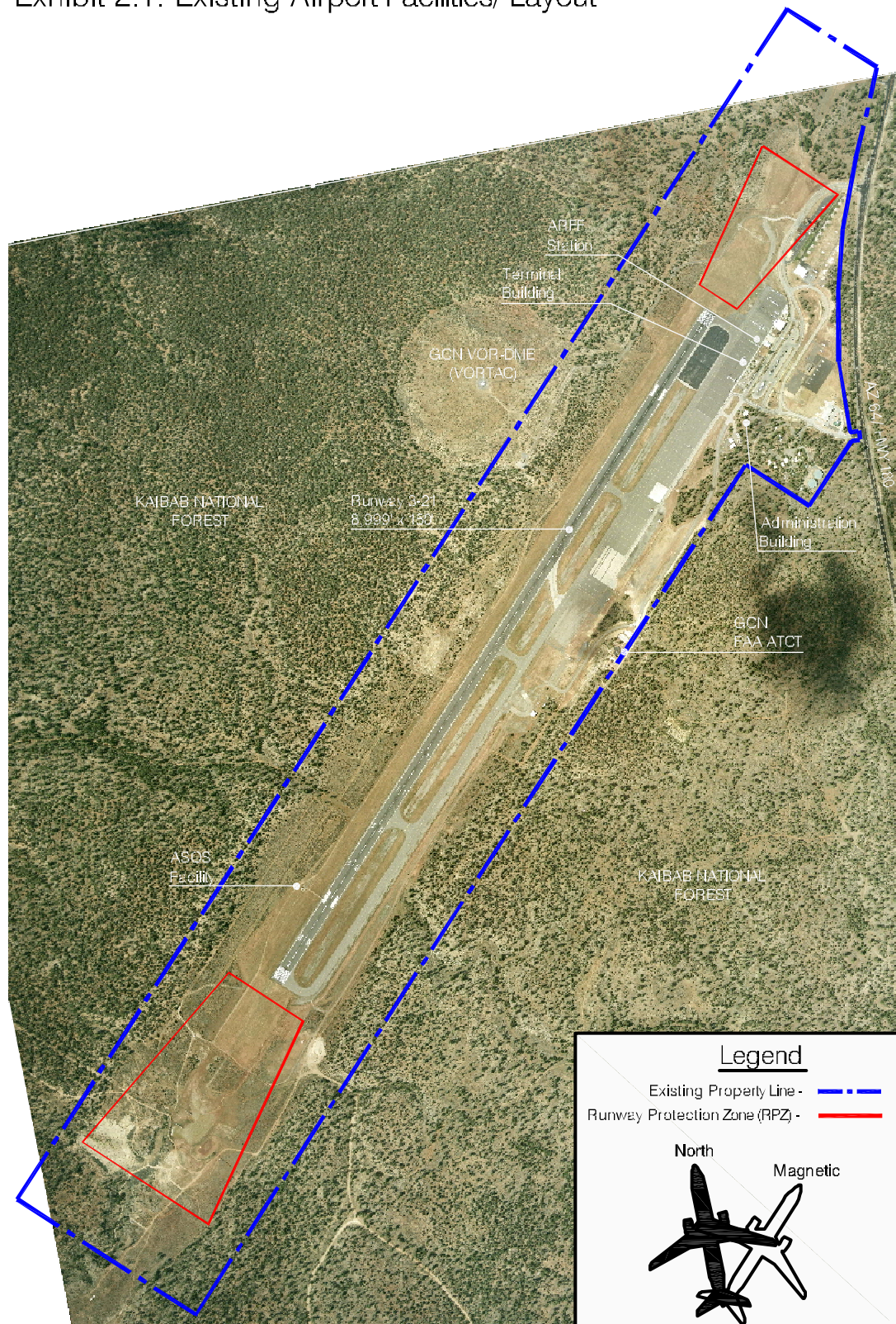
Source: Physical airport site inspection, BWR, February 2003.

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Exhibit 2.1: Existing Airport Facilities/ Layout



Source: ADOT, Aeronautics Division GCN Aerial Photograph, 2003.



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Runway Safety Areas/ Airport Design Standards

As a small hub, primary commercial service facility, the Grand Canyon National Park Airport must remain compliant with provisions outlined in Title 14 CFR, Part 139, *Certification and Operations: Land Airport Serving Certified, Scheduled Air Carriers Operating Large Aircraft*. The intent of the Part 139 certification is to ensure that airports accommodating certificated commercial air service achieve the highest possible degree of operational safety and efficiency.

An annual Part 139 certification inspection was conducted at the Grand Canyon National Park Airport on June 27, 2002. Although various items were noted with written recommendations provided for the Airport's consideration and action, the inspection revealed that the GCN is currently in compliance with the stipulations and requirements of Title 14 CFR, Part 139, the Airport Certification Manual (ACM), as well as the Airport Operating Certificate.

With regard to airport design standards, a cursory review of the existing approved airport layout plan set of drawings for GCN was conducted at the initiation of the current master plan study. In addition, an on-airport site visit was conducted in February 2003 to inventory the existing airside and landside facilities and to determine each component's compliance with respect to airport design standards. During the review of the ALP set, as well as the on-airport site visit, it was determined that the location of the Papillion Grand Canyon Helicopter structure may place it within the Runway Protection Zone (RPZ) for Runway 21. FAA Advisory Circular (AC) 150/ 5300-13, Change 7, *Airport Design* does not expressly permit structures or places of public assembly to be located within an RPZ as these areas are designed to protect persons, property and structures on the ground from aircraft. Further analysis is recommended to determine the exact location of the Papillion facility with respect to the boundaries of the Runway 21 RPZ in order to determine compliance with AC 150/ 5300-13, *Airport Design*.

Aside from the already mentioned Runway 21 RPZ condition, given the Airport's compliance with Part 139 certification standards coupled with the on-site inspection and airport layout plan review, it was determined that the Airport is compliant with FAA AC 150/5300-13, *Airport Design*.

Terminal Area/ Landside Facility Inventory

The components of the terminal complex/ landside area as they currently exist include, but are not limited, to the following terminal area items:

- | | |
|-------------------------------|----------------------------------|
| ✦ Passenger Terminal Building | ✦ ARFF Facilities/ Capability |
| ✦ Airport Tenants/ FBO | ✦ Maintenance and Security |
| ✦ Hangars | ✦ Aviation Fuel Storage Capacity |
| ✦ Auto Access/ Parking | ✦ Utility Access and Condition |

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Exhibit 2.2: Terminal Area/ Landside Facilities



Source: ADOT, Aeronautics Division GCN Aerial Photograph, 2003.

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Passenger Terminal Building Facilities

The role of the airport passenger terminal building at the GCN is to provide a facility that balances the existing and ultimate space requirements to accommodate peak passenger activity, baggage handling and processing, aircraft operations, ground access and egress, as well as business commerce. Most importantly, the primary purpose of the GCN passenger terminal building is to transfer passengers between surface and air transportation modes with minimum of confusion, inconvenience, and time.

Main Entrance- GCN Passenger Terminal Building



Initially constructed in 1968, and expanded to its current size in 1972, the GCN passenger terminal building, such as those commonly found at a small-hub airport, is referred to as a simple design centralized terminal building. At GCN, all passenger processes including ticketing, baggage check-in and baggage claim, pre-board screening, and aircraft boarding are accomplished in one building. Characteristics of a simple centralized design concept include having passengers walking onto the airport apron to board the aircraft, ample curb frontage for loading and unloading of ground transportation, and short walking distances from vehicle auto parking area to the terminal building entrance.

Table 2.8 describes the overall existing GCN passenger terminal building characteristics, tenants, and dimensions.

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*Table 2.8
Existing Passenger Terminal Building Facilities
Grand Canyon National Park Airport*

Terminal Building Item	Physical Condition/ Dimension
Passenger Terminal Building Public Access Areas	
Passenger Circulation/ Lobby & Waiting Area	990.0 sq. ft.
Baggage Claim Area	972.0 sq. ft.
Public Restrooms	668.0 sq. ft.
Passenger Terminal Building Service Areas	
Airport Management/ Administrative Office Area	594.0 sq. ft.
Open Corridor Space	2,026.0 sq. ft.
Mechanical/ Equipment Space	413.0 sq. ft.
Passenger Terminal Building Tenants	
Fred Harvey Trading Co./ TW Recreational Services, Inc.	469.9 sq. ft.
Air Vegas, Inc.	386.0 sq. ft.
Enterprise Rent-a-Car	56.4 sq. ft.
Eagle Canyon Airlines	285.0 sq. ft.
Arizona Charter (A Coach USA Company)	56.0 sq. ft.
CASSI- Grand Canyon Tusayan Shuttle	56.0 sq. ft.
Air Grand Canyon/ Sky Eye Air Tours	141.0 sq. ft.
Vision Air- Grand Canyon	373.0 sq. ft.
Scenic Airlines	285.0 sq. ft.
Grand Canyon Trail Guides	36.0 sq. ft.
AirStar Helicopters	142.0 sq. ft.
Passenger Terminal Building Total Facility Area	
Total Existing Leased Area	2,186.3 sq. ft.
Total Available Unleased Area	636.7 sq. ft.
Total Passenger Terminal Building Area	8,486.0 sq. ft.

Source: ADOT, Aeronautics Division; Airport site inspection, BWR, February 2003.

Airport Administration Building

The Grand Canyon National Park Airport's administration office is housed within a 3,264 square foot metal siding, wood framed modular structure located approximately 285 feet to the south-southeast of the passenger terminal building. Acquired in 1984, the airport administration building houses the airport management offices, airport operations administrative offices, conference room area, restroom facilities, foyer area and an FAA field office. Available parking facilities at the administration building include an unmarked gravel surface that accommodates approximately 30 long-term and employee parking spaces.

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Airport Administration Building



Fixed Base Operator (FBO)

An FBO is a privately operated enterprise engaged in rendering services associated with general aviation, such as fuel sales, aircraft and pilot supplies, aircraft and power plant maintenance, aircraft charter and rental, flight instruction and aircraft storage. The sole FBO service provider at the Grand Canyon National Park Airport is Grand Canyon Airlines (GCA) which is located on the southern portion of the airport parking apron adjacent to the airport ARFF facility. Grand Canyon Airlines, in operation from 7 a.m. to 7 p.m. daily including 24-hour callout service, is a full service FBO offering 100LL Avgas and Jet A fueling capabilities, major and minor aircraft and power plant maintenance and repair, aircraft storage (ramp and tie-down), computerized weather flight planning, as well as aerial tours and sightseeing flights.

Grand Canyon Airlines (GCA) FBO



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Grand Canyon Airlines sightseeing/ aerial tour business operation is located within a 5,473 square foot wood/ tile structure which accommodates administrative offices, ticket counter, passenger waiting area, and concession area. Grand Canyon Airlines FBO/ maintenance operation is located within a separate 10,000 square foot metal clear span hangar located immediately northeast of the GCA administrative building. Upon visual inspection, both structures appear to be in good physical condition.

Airport Apron Areas

The apron areas at an airport are those areas reserved for parking, maneuvering, loading and unloading, fueling or servicing of aircraft. The aircraft parking apron at the Grand Canyon National Park Airport is utilized primarily for aircraft ground maneuvering and operations, aircraft parking and tie-down, fueling operations, as well as operation by airport operations vehicles.

GCN Apron Areas (Looking North)



The GCN airport apron occupies approximately 91,800 square yards (826,200 square feet) of space, which fronts the core terminal area facilities along the northeastern, eastern, and southeastern terminal area complex. **Table 2.9** divulges pertinent information and facts regarding the GCN airport apron areas.

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Table 2.9
Airport Apron Area Facility Inventory
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Designated Area	Size (Sq. Yd.)	Location	Year Constructed
Air Carrier Apron	30,000 sq. yd.	Central Terminal Area	1965-67, 1974
General Aviation Apron	14,600 sq. yd.	Northeastern Terminal Area	1968
Southern/ Transient Apron	51,000 sq. yd.	Southern Terminal Area	1986-87
Total Apron Area	95,600 sq. yd.		
Aircraft Tie-Down and Aircraft Row Designations			
Aircraft Parking Row Number	Designated User Aircraft	Number of Parking Spaces/ Row	
1	General Aviation; Air Grand Canyon	5 Marked Tie-Downs	
2-3	Air Vegas	5 Marked Tie-Downs/ Row	
4-9	Scenic Airlines	5 Marked Tie-Downs/ Row	
10-11	Transient	5 Parking Spaces/ Row	
12	Air Bridge International, Ltd.	5 Parking Spaces/ Row	
13-16	Transient	Aircraft Deicing Area	
17-18	Vision Air	5 Parking Spaces/ Row	
19	Westwind Aviation	5 Parking Spaces/ Row	
20-28	Transient Heavy Aircraft; Military; Helicopters	5 Parking Spaces/ Row	
Total Number of Aircraft Tie Downs/ Parking Spaces		155 (50 Tie-Downs/ 105 Spaces)	

Source: ADOT, Aeronautics Division, February 2003.

Aircraft Hangar Facilities

Table 2.10 identifies the aircraft hangars located adjacent to the airport terminal complex according to owner, quantity, type, size, number of aircraft spaces, and physical condition. It should be noted that the information provided does not include private storage facilities located apart from the terminal area complex.

Table 2.10
Airport Hangar Facility Inventory
Grand Canyon National Park Airport

	Physical Characteristics			
Hangar/ Owner	Hangars Type	Physical Condition	Aircraft Spaces	Dimensions/ Area (Sq. Ft.)
Grand Canyon Airlines	Enclosed Clear- Span	Good	8-10	100' x 100'/ 10,000 sq. ft.
National Park Service	Enclosed Clear- Span	Good	1	60' x 60'/ 3,600 sq. ft.
Total Aircraft Hangar Storage Space			Approx.10	13,600 sq. ft.

Source: ADOT, Aeronautics Division; Airport Site Inspection, BWR, February 2003.

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Airport Terminal Area Auto Parking

Table 2.11 identifies and describes the available terminal area auto parking facilities at the Grand Canyon National Park Airport.

GCN Terminal Auto Parking Area (Looking South)



Table 2.11
Airport Terminal Area Auto Parking Inventory
Grand Canyon National Park Airport

Vehicle Type	Number of Spaces	Size (Sq. Ft.)
Passenger Vehicle	125	41,250 sq. ft.
Passenger Bus	34	23,120 sq. ft.
Rental Car (Enterprise)	20	6,600 sq. ft.
Handicapped Parking	6	1,980 sq. ft.
Employee Parking	30	9,900 sq. ft.
Airport Management/ Operations (Curbside)	5	1,650 sq. ft.
Total Parking Spaces	220	84,500 sq. ft.

Note: Total square footage is based on 330 sq. ft./ passenger vehicle and 680 sq. ft./ passenger bus which includes the dimension of the parking stall space and maneuvering area.

Source: ADOT, Aeronautics Division; Airport Site Inspection, BWR, February 2003.

Aircraft Rescue & Firefighting (ARFF)/ Emergency Service Availability

Title 14 CFR, FAR Part 139 identifies the level of emergency capability (Index) and the number, type and amount of equipment and extinguishing agents, as well as the operational requirements for an ARFF response and personnel training requirements. The airport's firefighting or emergency response capability index is based on the length of the

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most demanding aircraft, as well as the total number of average daily departures. The Grand Canyon National Park Airport's ARFF emergency response capability Index is classified as Index A¹. However, the GCN ARFF facilities and personnel are equipped to respond as an Index B² facility. ARFF services and personnel are available during tower operational hours and are on stand-by duty 15 minutes prior to and 15 minutes following air carrier/ commercial service operations.

The GCN ARFF equipment and personnel are located in a 2,150 square foot metal framed structure, constructed in 1973, that is located immediately adjacent to the airport parking apron situated approximately 110 feet northeast of the airport terminal building. **Table 2.12** inventories the GCN ARFF equipment and personnel, as well as the community of Tusayan emergency response capabilities currently in use.

ARFF emergency personnel employed at GCN consist of seven (7) qualified Emergency Medical Technician (EMT) full-time Arizona certified firefighter personnel. In addition, the GCN ARFF has a mutual aid agreement with the community of Tusayan in the event of an aircraft accident/ incident or aviation-related emergency. Tusayan's emergency response capability consists of one (1) full-time two-member Guardian Ambulance crew as well as 20 volunteer, two (2) full-time and one (1) part-time firefighting personnel, 12 of which are EMTs, while 17 members are Arizona certified firefighters.

GCN ARFF Facility



In addition to the services, equipment, and personnel offered by Tusayan Volunteer Fire Department and the GCN ARFF, there are additional local area medical/ emergency services available in the event of an aircraft emergency. In particular, the Grand Canyon Emergency Care Clinic and the National Park Service are equipped to respond to

¹ Index A - aircraft less than 90 feet in length (CRJ, DHC-6-300, Beech 99)

² Index B - aircraft 90-126 feet in length (Boeing 717 & 737, MD-80/ DC-9)

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emergency situations and render mutual aid should the need arise. The Grand Canyon Emergency Care Clinic, an eight (8) bed facility, located in the Grand Canyon Village, is staffed by two (2) medical doctors. In addition, the National Park Service employs approximately 35 EMT certified personnel and six (6) paramedics, and has three (3) ambulances and one (1) Eurocopter BK-117 helicopter.

Table 2.12
Aircraft Rescue & Firefighting (ARFF) Facility Inventory
Grand Canyon National Park Airport

GCN ARFF Equipment Inventory			
Equipment	Physical Characteristics		Capacity/ Material
	Year	Description	
Charlie-1	1995	OSHKOSH Lime Green Truck	1,585 gallons- water/ 206 gallons- AFFF
Charlie-2	1977	Red FORD Fire Truck	600 gallons- water
Rescue-1	1980	Lime Green CHEVY Quick Response Vehicle (1Ton; 4x4)	150 lbs. dry chemical/ 50 gallons- water
Tusayan Volunteer Fire Department Equipment Inventory			
TAC 5	2000	Red FORD Class A Foam Unit	300 gallons- water/ 10 gallons- AFFF
Engine 5	1976	Lime Green GMC Fire Truck	500 gallons- water/ 1,000 gallons per minute
Brush 5	1985	Lime Green INTERNATIONAL Truck	600 gallons-water
Command Vehicle	1997	Black FORD EXPLORER	n/a
Guardian Ambulance	1995	White/ Red Life Support Vehicle	Crew of one (1) EMT and one (1) Paramedic
Fire Ladder Vehicle	1996	LAFRANCE Fire Apparatus	300 gallons-water/ 1,250 gallon per minute

Source: ADOT, Aeronautics Division; Tusayan, AZ Volunteer Fire Department, February 2003.

The Flagstaff Medical Center, located approximately 70 miles to the south, is the nearest full-scale emergency medical service facility outside of the Tusayan/Grand Canyon vicinity. The Flagstaff Medical Center, a 120 bed facility, employs 143 medical doctors and nine (9) ambulances, and has two (2) helicopters, four (4) fixed wing air ambulances, and 20 emergency medical flight crew personnel. The Williams Health Care Center, 45 miles to the south, is a five bed facility which employs two (2) on-call medical doctors and has two (2) ambulances and their crews.

The Coconino County Sheriff's Office (CCSO) is responsible for law enforcement operations in all unincorporated areas within Coconino County including Tusayan. The CCSO employs three (3) to five (5) deputies to patrol the Grand Canyon/ Tusayan/ Grand Canyon National Park areas while being assigned to the Williams Sheriff's Office substation. In addition to the CCSO, the Arizona Department of Public Safety (DPS), as well as the National Park Service (NPS), provide law enforcement support in the immediate area. The DPS employs one (1) trooper that is assigned to the Tusayan area and assists

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the CCSO and the NPS with investigations, as well as tactical and air rescue operations. The NPS, with an undetermined number of law enforcement personnel, has an Intergovernmental Agreement with the CCSO for law enforcement mutual aid.

Air Traffic Control Tower (ATCT) Facility

The Grand Canyon National Park Airport ATCT, classified as an ATC Level 5 facility, was constructed during 2000-2002 and commissioned in March 2003 at which time the facility began commencing air traffic control operations. Currently, eight (8) certified air traffic control specialists and one (1) ATC manager staff the GCN ATCT. The GCN ATCT's hours of operation from June 1 until September 30 are daily from 6:00 a.m. to 8:00 p.m., Mountain Standard Time. During the winter months, the GCN ACTC hours of operation are daily from 7:00 a.m. to 7:00 p.m., Mountain Standard Time.

The GCN ATCT, owned and operated by the Federal Aviation Administration (FAA), is located at the Runway 3-21 midpoint just south-southwest of the southern aircraft apron area being situated approximately 3,240 feet south-southwest of the airport passenger terminal building.

Parking facilities at the GCN ATCT consist of 30 auto parking spaces including two (2) handicapped parking spaces. Constructed mainly of steel and concrete and reaching a top elevation of 121 feet above ground level (AGL), the GCN ATCT occupies approximately 5,044 square feet accommodating office, corridor, utility, and conference room space at the base of the tower, while the tower cab measures approximately 530 square feet in area.

GCN ATCT Facility (Looking Southwest)



Grand Canyon National Park Airport

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Security Facility Inventory

The Grand Canyon National Park Airport's perimeter fencing, as well as gate locations and method of access, are delineated in **Table 2.13**.

Table 2.13
Perimeter Fencing and Access Gate Inventory
Grand Canyon National Park Airport

Gate Designation	Gate Location	Access Information	
		Ingress	Egress
1	Rwy 3/ MALSR Utility Road	Padlock and Chain	Padlock and Chain
2	1,120 ' WSW of Rwy 3 End	Padlock and Chain	Padlock and Chain
3	Adjacent (NW) of Twy E	Padlock and Chain	Padlock and Chain
4	Abandoned ATCT Facility	Padlock and Chain	Padlock and Chain
5	NW of Abandoned ATCT Facility	Padlock and Chain	Padlock and Chain
6	Rwy 21/ NE of Localizer Array	Padlock and Chain	Padlock and Chain
7	Rwy 21/ NW of Papillion Facility	Electronic Key Pad	Elec. Key Pad/ Loop Detector
8	Adjacent to Fueling Facilities	Electronic Key Pad	Elec. Key Pad/ Loop Detector
9	Southern Apron Area	Electronic Key Pad	Electronic Key Pad
10	Southern Apron Area	Padlock and Chain	Padlock and Chain
11	Southern Apron Area	Electronic Key Pad	Elec. Key Pad/ Loop Detector
12	Forest Service/ ATCT Access Road	Padlock and Chain	Padlock and Chain
13	ESE of New ATCT Facility	Padlock and Chain	Padlock and Chain
14	SSE of Rwy 3 End	Padlock and Chain	Padlock and Chain

Source: ADOT, Aeronautics Division; Airport site inspection, BWR, February 2003.

Fuel Storage Facilities/ Fueling Operations

Aircraft fueling operations at the Grand Canyon National Park Airport are conducted by Grand Canyon Airlines FBO, which also owns and maintains the fueling facilities at the Airport. The airport fueling facilities, consisting of four above ground storage tanks, dispense 100LL Avgas, Jet A, diesel and unleaded automobile gas. Located immediately adjacent to the GCA FBO hangar and situated northeast of the general aviation/ air carrier airport apron area, the fueling facilities at GCN were installed in 2000-2001. Fueling operations at GCN, dispensed through the use of aircraft fueling trucks, are conducted from 7 a.m. to 7 p.m. daily including 24-hour callout service, when required.

Table 2.14 describes the storage capacity status of the fueling facilities at GCN.

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Table 2.14
Fueling Facility Inventory
Grand Canyon National Park Airport

Fuel Type	Storage Capacity
Jet A	20,000 gallons
100LL	20,000 gallons
Diesel Fuel	6,000 gallons
Unleaded Fuel	2,000 gallons
Total Airport Storage Capacity	48,000 Gallons

Source: Grand Canyon Airlines; Airport site inspection, BWR Corporation, February 2003.

GCN Fuel Farm Facility (Northeast Apron Area)



Table 2.15 describes the storage capacity status of the dedicated aircraft fueling trucks utilized by Grand Canyon Airlines at GCN.

Table 2.15
Aircraft Fueling Truck Inventory
Grand Canyon National Park Airport

Fuel Truck Designation	Fuel Type	Storage Capacity
J-1	Jet A	2,800 gallons
J-2	Jet A	2,000 gallons
J-3	Jet A	4,500 gallons
AV-1	100LL Avgas	2,000 gallons
AV-2	100LL Avgas	1,100 gallons
Total Aircraft Fueling Truck Storage Capacity		12,400 Gallons

Source: Grand Canyon Airlines; Airport site inspection, BWR Corporation, February 2003.

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GCA Fuel Truck Fleet



Utilities & Service Providers

Table 2.16 describes the utilities located and utilized at GCN, as well as the providers of utility service at GCN. Following interviews with airport administration and support personnel it was determined that the existing utility services and service providers are adequate for sustained operation of the Grand Canyon National Park Airport. According to airport management and operations personnel, the existing utility services and service providers are adequate to sustain the airport during peak operational periods.

Table 2.16
Utilities and Service Providers
Grand Canyon National Park Airport

Utility Service	Service Provider
Electrical Service	Arizona Power Service/ Emergency Power Generator On-Site
Water System	Self-contained rain water containment system (3.175 million gallons)
Telephone Service	Mountain Bell Telephone Company
Aviation Fuel/ Natural Gas	AvFuel/ Tusayan Public Utility District
Waste Water Sewer System	Tusayan Public Utility District
Fire Protection Service	GCN ARFF/ Tusayan Community Volunteer Fire Department

Source: ADOT, Aeronautics Division; Airport Site Inspection, BWR, February 2003.

Airport Maintenance and Operations Facilities

The Grand Canyon National Park Airport's operations and maintenance facilities are delineated in **Table 2.17**. The GCN employs approximately 10 full-time airport maintenance and operations personnel.

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Table 2.17
Airport Maintenance and Operations Facility Inventory
Grand Canyon National Park Airport

GCN Snow Removal and Equipment (SRE) Facility Inventory (Buildings)			
Building	Physical Characteristics		
	Year	Building Type	Square Footage (Sq. Ft.)
M-1	1982	Vehicle Storage	2,560 sq. ft.
M-2	1968	Equipment Shed	1,680 sq. ft.
M-3	1967	Maintenance Shed	384 sq. ft.
M-4	1968	Storage Shed	240 sq. ft.
M-5	1967	Generator Building	144 sq. ft.
Total SRE Building Square Footage			5,008 Sq. Ft.
GCN Snow Removal and Equipment (SRE) Inventory			
Equipment Piece	Physical Characteristics		
	Year	Description	
Backhoe-1	1986	CHASE Tractor/ Backhoe	
Blower-1	1992	Orange IDAHO NORLAND Snow Blower	
Blower-2	1974	Yellow IDAHO NORLAND Snow Blower	
Grader-1	1953	Motor Grader	
Mower-1	1965	FORD Tractor/ Motor	
Mower-2	2000	HUSQVARNA Riding Mower	
Old Jeep	1952	Willy Jeep	
Plow-1	1974	Yellow WHITE Plow Truck	
Plow-2	1974	Yellow WHITE Plow Truck	
Plow-3	1997	White INTERNATIONAL Plow Truck	
GCN Airport Operations Equipment Inventory			
Ops-1	2000	White DODGE ½ Ton 4x4 Pick-Up Truck	
Old Ops-2	1985	White CHEVY ½ Ton 4x4 Pick-Up Truck	
Ops-3	1991	White CHEVY ½ Ton 4x4 Pick-Up Truck	
Old Ops-4	1980	Yellow CHEVY ¾ Ton 4x4 Pick-Up Truck	
Ops-5	1991	Tan CHEVY ¾ Ton Van	
Ops-6	1988	White CHEVY ½ Ton 4x4 Pick-Up Truck	
Ops-7	1988	White FORD ½ Ton 4x4 Pick-Up Truck	
Ops-8	1982	Yellow CHEVY Stake Bed Trash Truck	
Ops-9	1986	Tan CHEVY S-10 Pick-Up Truck	
Ops-10	1990	White DODGE 1 Ton 4x4 Pick-Up Truck	
Ops-11	1980	White CHEVY 1 Ton Utility Truck	

Source: ADOT, Aeronautics Division, February 2003.

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Automated Surface Observation System (ASOS)

The Grand Canyon National Park Airport ASOS Type 3 facility is a suite of sensors which measures, collects and broadcasts weather data such as wind speed, wind gust, wind direction, temperature, dew point, altimeter setting, density altitude, sky condition, and visibility to help meteorologists, pilots and flight dispatchers prepare and monitor weather forecasts, plan flight routes, and provide necessary information for takeoffs and landings. ASOS units provide a minute-to-minute update to pilots by VHF radio or non-directional beacon. The GCN ASOS, designated KGCN, is located approximately 1,000 feet northeast of the Runway 3 threshold and is co-located with the Runway 3 glideslope antenna. Commissioned in May 1998 and installed by the National Weather System, the GCN ASOS is linked to the NWS system of ASOS/ AWOS facilities.

GCN ASOS-III System



Airport Tenants

Table 2.18 illustrates the roster of tenants who conduct business ventures at the Grand Canyon National Park Airport. Currently, based upon seasonal fluctuations, tenants based at GCN employ approximately 65-80 employees.

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*Table 2.18
Airport Tenant Roster
Grand Canyon National Park Airport*

Tenant	Facility Size	Location	Business Type
Air Grand Canyon/ Sky Eye Air Tours	141 sq. ft.	Terminal Building	Air Tour Operator
AirStar Helicopters	11,600 sq. ft.	Terminal/ SSE of Terminal Building	Air Tour Operator
Air Vegas, Inc.	386 sq. ft.	Terminal Building	Air Tour Operator
Arizona Charter	56 sq. ft.	Terminal Building	Bus/ Tourism Company
CASSI- Grand Canyon Tusayan Shuttle	56 sq. ft.	Terminal Building	Bus/ Tourism Company
Eagle Canyon Airlines	285 sq. ft.	Terminal Building	Air Tour Operator
Enterprise Rent-a-Car	56.4 sq. ft.	Terminal Building	Rental Car Company
Fred Harvey Trading Co./ TW Rec. Serv.	469.9 sq. ft.	Terminal Building	Concessionaire
Grand Canyon Airlines	15, 473 sq. ft.	NE of Terminal Building	Air Tour Operator
Grand Canyon Trail Guides	36 sq. ft.	Terminal Building	Tourism Company
Kenai Helicopters	13,330 sq. ft.	ESE of Terminal Building	Air Tour Operator
Papillion Grand Canyon Helicopters	7,146 sq. ft.	NE of Terminal Building	Air Tour Operator
Scenic Airlines	285 sq. ft.	Terminal Building	Air Tour Operator

Source: ADOT, Aeronautics Division; Airport Site Inspection, BWR, February 2003.

Airport Access & Signage

The Grand Canyon National Park Airport is accessed via two separate entrances that lead in from Arizona Highway 64 located immediately southeast of the Airport. The first of the two entrances, the south entrance, leads onto a two-lane paved access road providing direct access to the main terminal area complex via a one-way two-lane paved road that is situated southeast of and parallel to the terminal area curbside roadway. The end of this one-way paved road terminates with a circular turn leading onto the terminal area curbside roadway. In addition, the terminal building auto parking area is accessed via this one-way road.

The second airport entrance, the north entrance, leads onto a two-way paved, grass median roadway from Arizona Highway 64. The north entrance provides direct entrance and exit to the community of Tusayan. The north airport access road proceeds in a southwesterly fashion merging with the southern airport entrance road into the terminal area curbside roadway where one-way vehicular traffic is accommodated with approximately 960 feet of curbside frontage providing access to the Grand Canyon Airlines building, ARFF facility, as well as the passenger terminal building. In addition, the northern airport access/ curbside frontage road proceeds in a southwesterly fashion and provides direct access to the airport administration building, airport maintenance/ operations facility, as well as the newly constructed FAA ATCT further to the southwest of the administration

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building. In addition to the northern and southern airport access roads, a third two-way paved road, located southeast and parallel to the southern airport access road, provides access to Kenai Helicopters, Papillion Helicopters further to the north-northeast, as well as northern access road where all access roads lead into the terminal curbside/ frontage road.

Directional signage located within the confines of the airport terminal area provide easy and direct recognition which include a variety of standard regulatory signs (stop, speed limit, parking, and one-way signs); warning signs (intersection warning, merge, and advisory signs); and guide signs (street name, arrow, numbered highway, and parking area signs). With regard to airport directional and location signage adjacent to Arizona Highway 64, location and distance guide signs are strategically placed along the surface transportation routes in the Flagstaff, Tusayan, Page and Williams regions, providing easy and direct access to the Airport.

Intermodal/ Ground Transportation Network Assessment

Grand Canyon Railways, a privately owned historic railroad headquartered in Williams, AZ, initiated service in September 1901. Located 65 miles south of the Grand Canyon, the Grand Canyon Railway line travels in a north-south fashion southwest of GCN and operates twice daily between the Grand Canyon Village and Williams. According to the Tusayan Area Plan, adopted by the Coconino County Board of Commissioners, Planning and Zoning Commission and the Tusayan Planning Committee in 1995 and amended in 1997, service was initiated due to the historic significance of the railroad and to reduce vehicular traffic in and around the Grand Canyon Village. According to the Plan, an additional spur line linking the Grand Canyon National Park Airport and the Grand Canyon Village has been proposed to further reduce the vehicular traffic within the Park, as well as the Grand Canyon Village. The spur line alternative, although not yet constructed and having had an Environmental Impact Statement (EIS) completed in 1993, would feature a turnaround loop at the Airport, two railway depots, 75-acre parking facility, construction of a maintenance road and storage tanks for fuel, potable water, as well as wastewater.

Aside from airway, railway, and surface transportation modes, Tusayan and GCN are not equipped with a mass ground transportation system. The extent of the public transportation system in the Tusayan area includes privately owned and operated chartered passenger bus and van lines utilized primarily for recreational and tourism purposes. The van and bus services offered in the area, usually associated with air tour operations at the Airport, connect the Grand Canyon National Park Airport with Tusayan, as well as the Grand Canyon Village and the remainder of the Grand Canyon National Park.

In addition to chartered bus and van line operations, various hotels and resorts in the area offer a complimentary bus and van service link between their establishment and the Airport. Lastly, the local FBO, Grand Canyon Airlines, offers courtesy ground transportation, in the form of a courtesy car or van service into Tusayan, to general aviation patrons who utilize FBO services.

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Airspace & Air Traffic Control

Exhibit 2.2 depicts the airspace and air traffic control structure surrounding the Grand Canyon National Park Airport. The airspace and air traffic control analysis of the GCN will include an assessment of local area airports, airspace structure and charted airways, special use airspace and local air traffic operational procedures.

Local Area Airports

Table 2.19 illustrates the Grand Canyon local area, as well as nearby commercial service airports including information regarding the airport elevation, primary runway information, airport role, and distance and direction from GCN.

Table 2.19
Local Area Public-Use Airport Facilities
Grand Canyon National Park Airport

Airport Name/ Associated City	Airport Elevation (MSL)	Primary Runway Characteristics	Airport Role	Location/ Distance
Flagstaff-Pulliam Airport/ Flagstaff, AZ	7,014'	3-21: 6,999' x 150'	Commercial Service	67 Miles SSE
Grand Canyon West Airport/ Peach Springs, AZ	4,775'	17-35: 5,000' x 60'	General Aviation	81 Miles W
Pearce Ferry Airport/ Meadview, AZ	2,941'	1-19: 2,810' x 90'	General Aviation	92 Miles W
Grand Canyon Bar Ten Airstrip/ Whitmore, AZ	4,100'	16-34: 4,600' x 40'	General Aviation	55 Miles WNW
Tuweep Airport/ Tuweep, AZ	4,682'	2-20: ,600' x 40'	General Aviation	50 Miles WNW
Marble Canyon Airport/ Marble Canyon, AZ	3,603'	3-21: 3,715' x 35'	General Aviation	67 Miles NNE
Page Municipal Airport/ Page, AZ	4,313'	15-33: 5,499' x 150'	Commercial Service	77 Miles NNE
Tuba City Airport/ Tuba City, AZ	4,513'	15-33: 6,230' x 75'	General Aviation	38 Miles ENE
Valle Airport/ Grand Canyon, AZ	5,999'	1-19: 4,262' x 45'	General Aviation	18 Miles S

Source: NOAA/FAA NACO Las Vegas Sectional Aeronautical Chart, 2003.

Airspace Structure

Exhibit 2.2 illustrates the airspace and air traffic control structure surrounding the Grand Canyon National Park Airport and includes the depiction of Class D, E and G airspaces, as well as local area en-route navigational aids and special use airspace areas.



Grand Canyon National Park Airport

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Airspace Classifications

Class D Airspace

The airspace immediately adjacent and abeam to the Grand Canyon National Park Airport is classified as controlled Class D Airspace. GCN Class D airspace originates at the Airport's surface elevation and extends upward 2,500 feet to include an altitude of 9,100 feet MSL and is centered upon the GCN ATCT forming a 5-nautical mile radius (10-mile diameter) of controlled airspace. While operating within GCN Class D airspace, aircraft/aircrews must establish contact with the GCN ATCT prior to entering GCN Class D and must maintain contact while within the controlled airspace to land at GCN or to transverse the area, as well as maintaining an aircraft speed of 200 knots. When departing from GCN Class D airspace, two way radio contact must be established and maintained with the GCN ATCT while operating within GCN airspace. When the GCN ATCT is not in operation, Class D airspace reverts to controlled Class E airspace.

Class E Airspace

Class E airspace exists everywhere from 14,500 feet MSL up to 18,000 feet MSL, unless that airspace falls within 1,200' of the surface at an airport where Class E is utilized as an approach transition, as is the case with GCN. GCN controlled Class E airspace begins at 700 feet above ground level (AGL) and extends up to but does not include 18,000 feet MSL to aid aircraft/ aircrews in the transition to/ from the terminal environment to the en-route flight environment. Aircrew and aircraft are not required to be in contact with ATC services and are recommended to follow traffic advisory practices while maintaining an aircraft speed of 250 knots when operating below 10,000 feet MSL.

Class G Airspace

Class G uncontrolled airspace at GCN is located from the surface to the base of the overlying controlled airspace (Class D or E) which is 700 feet MSL and extends up to and includes 14,500 feet MSL.

Air Traffic Control Communications/ Facilities

Air Route Traffic Control Center (ARTCC)

The GCN airspace boundaries reside within the Area of Specialization (AOS) of the Los Angeles Air Route Traffic Control Center (ZLA ARTCC- L.A. CENTER), located in Los Angeles, CA. The Los Angeles ARTCC is established to provide ATC services to aircraft operating on IFR flight plans principally during the en-route phase of flight at altitudes above 10,000 feet above mean sea level. When equipment capabilities and controller workload permit, advisory/ assistance services may be provided to VFR aircraft departing from and arriving at the Grand Canyon National Park Airport.

Due to its geographic location, and the AOS airspace boundaries of ZLA, aircraft transitioning to the immediate northeast and east will enter the AOS of Denver ARTCC (ZDV- DENVER CENTER) located in Longmont, CO. Aircraft transitioning the immediate southeast and south will enter the AOS of the Albuquerque ARTCC (ZAB- ALBUQUERQUE CENTER) located in Albuquerque, NM.



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Terminal Radar Approach Control (TRACON) Facility

The Los Angeles Center Approach/ Departure Control TRACON, located in Los Angeles, CA is a terminal area facility providing transitional air traffic control service from the ZLA ARTCC for arriving and departing IFR, VFR, and en-route aircraft operating to and from the Grand Canyon National Park Airport.

The TRACON is divided into sectors that can be identified as approach control, departure control, clearance delivery, and flight data. Clearance delivery involves the coordination and processing of initial departure, route of flight, and final altitude information that is disseminated to aircrews. The flight data position/ sector relays flight plan and airport information to other controller sectors within the TRACON.

Air Traffic Control Tower (ATCT)

The GCN ATCT is responsible for the sequencing and separation of all IFR and specific VFR air traffic transitioning from the en-route and approach flight environment and operating within the GCN Class D airspace. The GCN ATCT has four major functions including: *local control* (sequencing and separation of all arriving and departing air traffic); *ground control* (separation of taxiing aircraft traffic on the ground); *clearance delivery* (pre-taxi IFR and VFR clearance instructions); and *weather information* (Automated Terminal Information System– local area weather information/ observations for arriving and departing aircraft).

Automated Flight Service Station (AFSS)

The AFSS is the primary source for obtaining preflight briefings and in-flight weather information. AFSS offer three types of flight briefings that can be disseminated during the pre-flight or en-route phase of air operations which include a standard weather briefing, abbreviated weather briefing, or an outlook weather briefing. The controlling AFSS providing forecast and en-route weather information to aircrews operating in the Grand Canyon vicinity is located in Prescott, AZ (Prescott AFSS). The Prescott AFSS can be contacted by aircrews via remote communication over an assigned air route frequency or telephone land line or by a remote communications outlet (RCO) in operation on the airfield.

En-Route Navigational Aids (NAVAIDS)

Very High Frequency Omni-Directional Radio Range (VOR-DME)

The VOR is a ground-based electronic navigational aid transmitting VHF signals 360 degrees oriented from magnetic north, allowing aircraft to track to and from the facility, located on or near an airport. A VOR station is a facility consisting of two components, VOR and Distance Measuring Equipment (DME) which provides three (3) services including VOR azimuth (bearing information), distance information and estimated time en-route information. The VOR-DME broadcast range is typically 200 nautical miles and is restricted by line-of-sight (VHF signals do not follow the curvature of the earth), and periodically identifies itself by Morse Code.



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The GCN VOR-DME, owned and operated by the FAA, as well as being a 24-hour operational facility, is classified as a low level altitude facility having an approximate range of 40 nautical miles. Additional information regarding the GCN VOR-DME includes limitations on the VOR facility's range between the 065 and 115 radials beyond 35 nautical miles and below 14,500 feet MSL. The DME portion of the VOR station is limited between radials 350 and 035 beyond 35 nautical miles and below 14,500 feet MSL and between radials 035 to 115 beyond 25 miles and below 14,500 feet MSL. Additional VOR facilities in the immediate vicinity of the Grand Canyon National Park Airport are the TUBA CITY VORTAC located 44 nautical miles ENE, the PAGE VOR-DME located 67 nautical miles NNE, and the PEACH SPRINGS VORTAC located approximately 71 nautical miles to the WSW.

Established air routes, also known as Victor Airways, are a charted and published route linking VOR/ VOR-DME/ VORTAC stations throughout the contiguous United States. Victor Airways are low level (below 18,000 feet MSL- Flight Level (FL) 180) Class E airspace corridors which are approximately 10 nautical miles wide and whose airspace begins at 1,200 feet MSL and extends up to but not including FL 180 (17,999 feet MSL). **Exhibit 2.3** depicts multiple Victor Airways (V 257, V 293, V 210, and V 208) that transition over the GCN VOR-DME station.



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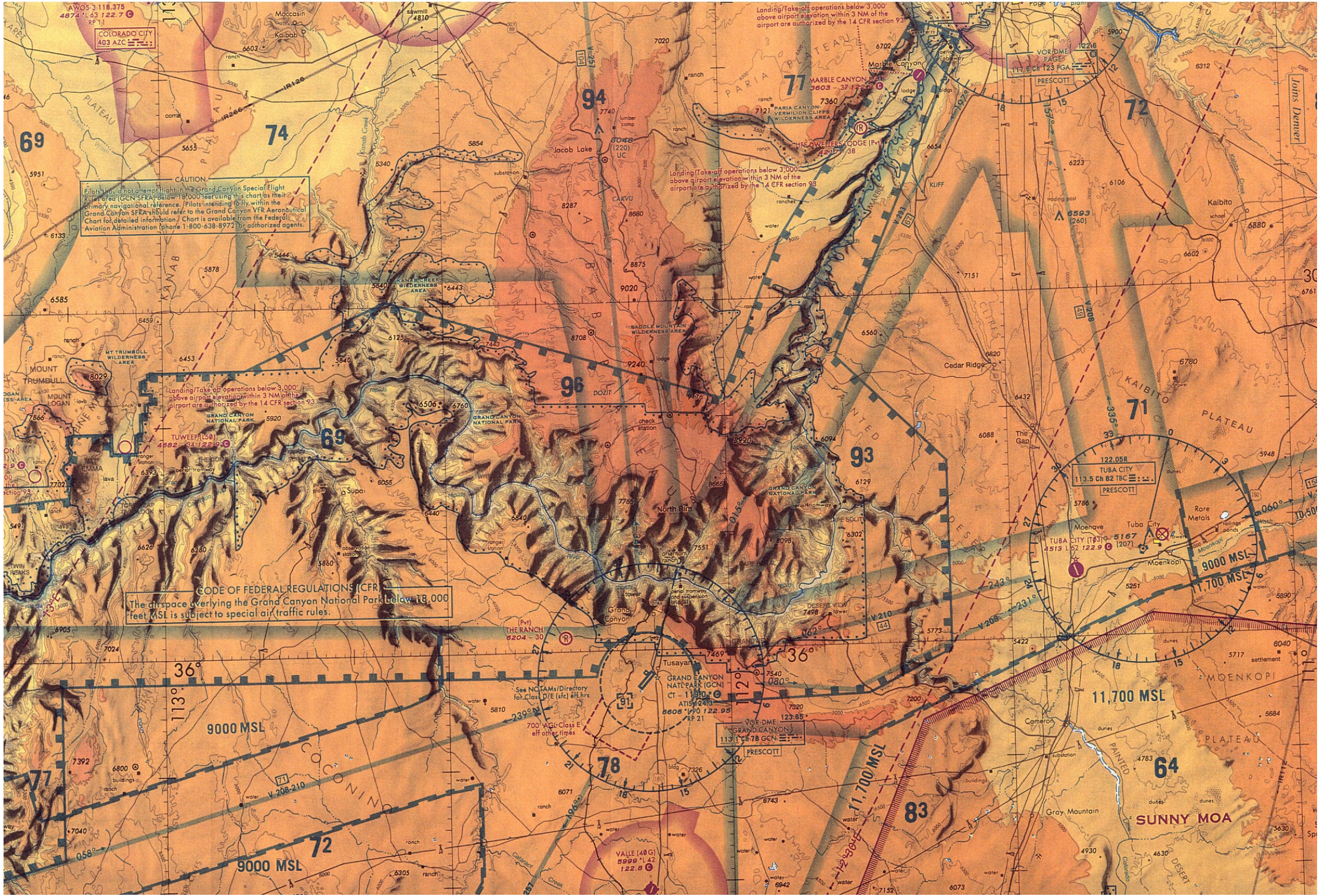
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Grand Canyon National Park Airport

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Exhibit 2.3: Grand Canyon National Park Airport Airspace Structure



Source: NOAA/ FAA NACO Las Vegas Sectional Aeronautical Chart, 2004.



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Grand Canyon National Park Airport

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Published Instrument Approach Procedures

Table 2.20 discloses information regarding the published instrument approach procedures in place at the Grand Canyon National Park Airport. Instrument approach procedures permit operations during instrument meteorological conditions and further increase access, capacity, and overall safety and efficiency of the Airport.

Table 2.20
Published Instrument Approach Procedures
Grand Canyon National Park Airport

Runway Approach End	Approach Type	Runway Visibility Approach Minimums/ Category	Minimum Descent Altitude (MDA)
	Straight-In ILS 3	½-mile (A, B, and C); n/a (D)	6,753' MSL/ 200' AGL
	Straight-In LOC 3	½-mile (A, B, and C); n/a (D)	6,940' MSL/ 400' AGL
ILS/ DME RWY 3	Circling	1-mile (A and B); 1 ½-mile (C); n/a (D)	7,140'/ 7,160' MSL 600' AGL
	Straight-In 3	½-mile (A and B); 1-mile (C); 1 ¼-mile (D)	7,100' MSL/ 500' AGL
VOR RWY 3	Circling	1-mile (A and B); 1 ½ -mile (C); 2¼-mile (D)	7,140'/ 7,160'/ 7,300' MSL 600'/ 700' AGL
	Straight-In 3	½-mile (A and B); ¾ -mile (C); n/a (D)	6,690' MSL/ 400' AGL
GPS RWY 3	Circling	1-mile (A and B); 1 ½ -mile (C); n/a (D)	7,140'/ 7,160' MSL 600' AGL

ILS- Instrument Landing System

LOC- Localizer

DME- Distance Measuring Equipment/ VOR-DME

VOR- Very High Frequency Omni-Directional Range/ VOR-DME

GPS- Global Positioning System

Source: U.S. Terminal Procedures - Southwest (SW-1), 2003.

Special Use Airspace(s)

Restricted Areas

A Restricted Area is a defined area of airspace within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most Restricted Areas are designated joint-use and IFR/ VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the controlling agency. Currently, there are no Restricted Areas in the vicinity of the Grand Canyon National Park Airport.

Military Operations Area (MOA)

An MOA is established outside of Class A airspace to separate or segregate certain non-hazardous military activities from IFR traffic and to identify where these activities are conducted for VFR traffic. Both military and civilian aircrews must exercise due diligence and due care in seeing and avoiding other aircraft. The SUNNY MOA is located approximately 23 nautical miles southeast of the Airport. Primarily utilized by Luke Air Force Base, located near Glendale, AZ, the SUNNY MOA's controlling ATC agency is the Albuquerque ARTCC (ZAB- ALBUQUERQUE CENTER) located in Albuquerque, NM.

Exhibit 2.3 depicts the Special Use Airspace areas in the vicinity of the Grand Canyon National Park Airport.

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Grand Canyon Special Flight Rules Area (SFAR 50-2)

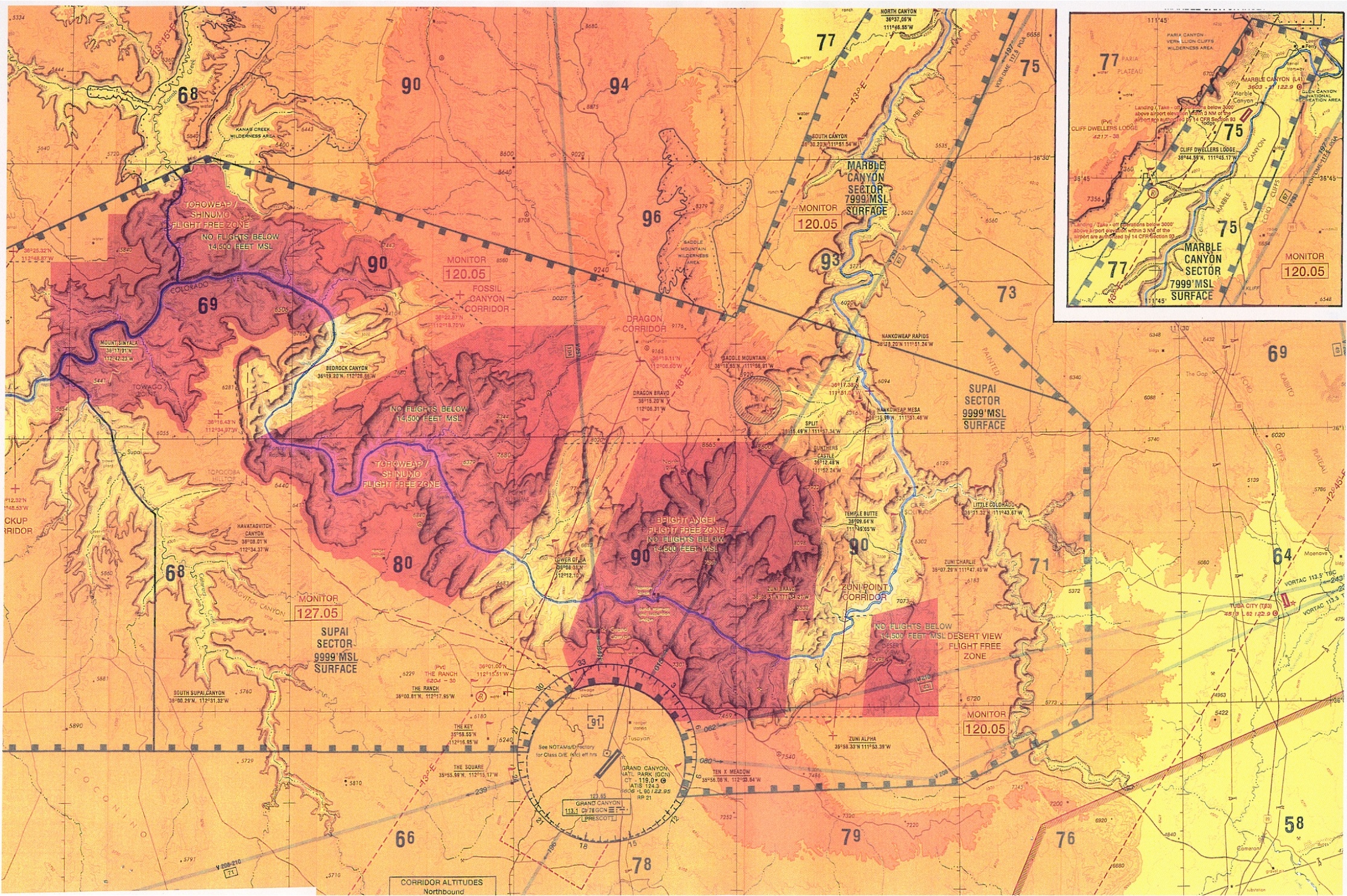
Special regulations (SFAR 50-2) apply to all aircraft operations below 18,000 feet MSL. Except in an emergency situation or if otherwise authorized by the Las Vegas Flight Standards District Office (FSDO) for certain limited operations, aircraft must remain at or above specified altitudes in certain portions of the Park. SFAR 50-2 airspace regulations include the airspace from the surface up to but not including 14,500 feet MSL while the procedures of SFAR 50-2 include specific operating altitude and advisories, flight free zones, and designated corridors to be utilized for Park over-flight operations.

The SFAR 50-2 Area is divided into four distinct sectors, two of which influence the commercial and tour operator and general aviation operations at the Grand Canyon National Park Airport the most. The Supai Sector, located immediately west, north and east of GCN, has an altitude envelope which begins at the surface and extends up to 9,999 feet MSL. The second sector, Marble Canyon Sector, is located approximately 27 nautical miles north-northeast of GCN and includes an operational airspace limitation that begins at the surface and extends upward to 7,999 feet MSL.

The Supai Sector includes four flight free zones. The Desert View and Bright Angel flight free zones are situated east-northeast and north, respectively, of GCN. The final flight free zone is divided into two halves, both being designated the Toroweap/ Shinumo Flight Free Zone. Aircraft operations below 14,500 feet MSL within the flight free zones are prohibited by SFAR 50-2.

Aircraft flight routes for those aircraft operations transecting the Grand Canyon National Park airspace are also addressed in SFAR 50-2. Aircraft traveling north or south over the Canyon at or below an altitude of 14,500 feet MSL must utilize one of three established flight corridors. The first corridor, the Zuni Point Corridor, is located east and northeast of GCN and is established between the Nankoweap Mesa to the north and the Zuni Alpha Plateau to the south. The second corridor, the Dragon Corridor, is located north-northwest of GCN and transitions over the Tower of Ra located inside the Park. The final corridor, the Fossil Canyon Corridor, is located to the northwest of GCN and transects/divides the Toroweap/Shinumo Flight Free Zone. **Exhibit 2.4** depicts the Special Flight Rules Area, SFAR 50-2, as it relates to and impacts the Grand Canyon National Park Airport.

Exhibit 2.4: Grand Canyon National Park Special Flight Rules Area (SFAR 50-2)



Source: NOAA/ FAA NACO Grand Canyon VFR Aeronautical Chart, 2004.



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Local Air Traffic Operational Procedures

The Grand Canyon National Park Airport experiences a high volume of general aviation, commercial service and commercial air tour operations utilizing a variety of fixed wing and rotorwing aircraft. The fleet mix of aircraft, as well as the heavy operational tempo at GCN, requires a well defined set of operational procedures to ensure that fixed wing and rotorwing aircraft alike can occupy the same airspace in and around GCN in a safe and efficient manner. At the same time, the local operational procedures assist air traffic with navigating in and around the Special Flight Rules Areas in force over the Grand Canyon. The following discussion highlights the local area air traffic operating procedures for the GCN.

Commercial Air Tour Operations

Fixed Wing VFR Routes

The first Fixed Wing VFR routes to be discussed are the Blue Direct North (BDN) and Blue Direct South (BDS) which are utilized primarily by commercial air tour aircraft, as well as non-scheduled air carrier aircraft arriving from and departing for the Las Vegas Metropolitan Area.

Blue Direct North/ Blue Direct South VFR Route: When transitioning to/ from GCN Class D airspace, commercial fixed wing aircraft will navigate to the Square VFR checkpoint located approximately five (5) nautical miles west-southwest of the Airport and intercept Victor Airway 208-210. When departing, the BDN experiences altitude changes along the route varying from 7,500 feet MSL to 10,500 feet MSL depending on weather conditions and other aircraft operating along the route. Likewise, altitude changes along the route when aircraft are arriving at GCN vary between 7,500 feet and 10,500 feet MSL. The BDS VFR Routes experiences the same altitude changes on route as with the BDN route. Fixed Wing VFR routes utilized primarily by commercial air tour aircraft arriving and departing from the Grand Canyon National Park Airport for air tour operations are the Black 1 and Black 1 Alpha VFR Routes.

Black 1 VFR Route: Aircraft utilizing Black 1 VFR Route (B1) will depart the Airport to the east-southeast along a 099 degree 7.5 nautical mile DME course to intercept the Ten X Meadow VFR check point and from there proceed northeast to the Zuni Alpha checkpoint. Traveling in a north-south fashion through the Zuni Point Corridor, B1 transitions over the Saddle Mountain VFR check point and Point Imperial on the northernmost point of the route. On the return route to the Airport, aircraft navigating along B1 proceeds south and pass over the Grandview Tower checkpoint to transition back to GCN Class D airspace.

Black 1 Alpha VFR Route: Black 1 Alpha VFR Route (B1A) utilizes the same VFR route to reach the north rim of the Canyon navigating through the Zuni Point Corridor. At the Point Imperial/ Split VFR checkpoint, B1A proceeds westbound and passes over the Dragon Bravo check point to enter the Dragon Corridor. B1A proceeds south-southeast and passes over the Tower of Ra and River VFR



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checkpoint where the route intersects the GCN VOR-DMW 290 degree outbound radial and travels in a southeastern direction where transition back to GCN Class D airspace is made possible.

VFR Helicopter Routes

VFR helicopter routes utilized primarily by commercial air tour rotorwing aircraft arriving and departing from the Grand Canyon National Park Airport for air tour operations are the Green 1, Green 1 Alpha, and Green 2 VFR helicopter routes.

Green 1 VFR Helicopter Route: The Green 1 VFR helicopter route (G1) is the same route, from a procedural and operational standpoint, as the Black 1 VFR Route for fixed wing aircraft in that it follows the same flight route through the Zuni Point Corridor.

Green 1 Alpha VFR Helicopter Route: The Green 1 Alpha VFR helicopter route (G1A) is the same route, from a procedural and operational standpoint, as the Black 1 Alpha VFR Route for fixed wing aircraft in that it follows the same flight route through the Dragon Corridor.

Green 2 VFR Helicopter Route: The Green 2 VFR helicopter route (G2) is an air tour helicopter flight route traveling through the Dragon Corridor. G2 departs the GCN Class D airspace via 295 outbound radial from the GCN VOR-DME and proceeds northwest to and then northeast into the Dragon Corridor. The G2 route continues northeast bound to rendezvous with the Dragon Bravo VFR checkpoint at which time the route then proceeds at generally the same altitude to the south-southwest. Upon exiting from the Dragon Corridor, G2 proceeds southeast to transition back to the GCN Class D airspace.

Exhibit 2.5 depicts the Special Flight Rules Area, SFAR 50-2, as it relates to and impacts the commercial air tour operations taking place at the Grand Canyon National Park Airport.

Instrument Departure Procedures (Formerly Known as SIDS)

Instrument Departure Procedure (DP) - formerly known as a Standard Instrument Departure (SID) - is a published pre-planned instrument flight rule (IFR) air traffic control departure procedure printed for pilot use in graphic and/ or textual format. DPs provide instructions for aircraft to transition from the terminal area or local control (ATCT/ TRACON) to the appropriate en-route flight environment (ARTCC). The GCN has two (2) published DPs for aircraft departure which are identified as follows:

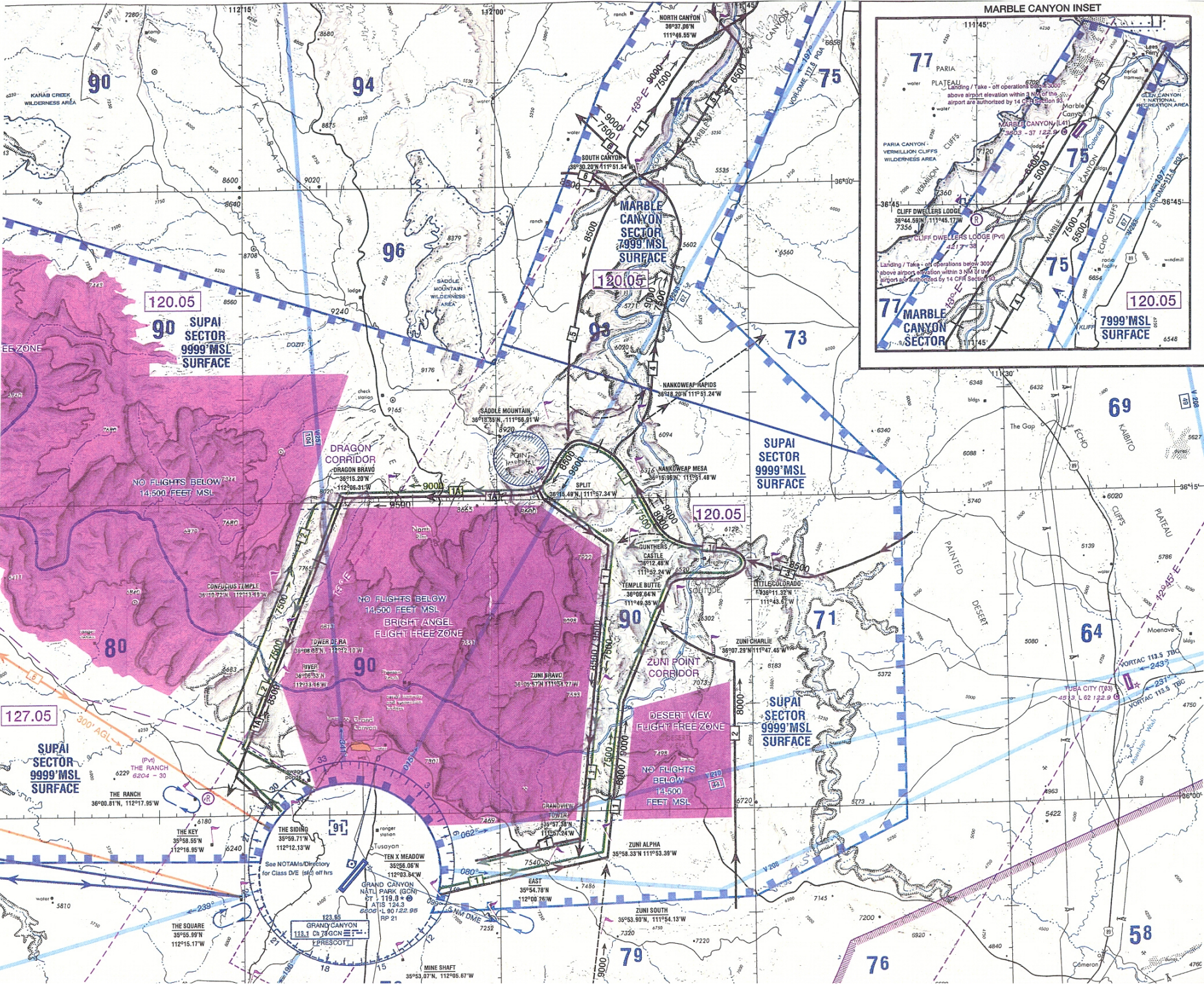
GRAND ONE DEPARTURE: Take-off Runway 21: Climb runway heading until reaching 3 nautical miles southwest of the GCN VOR-DME, then turn left heading 175° until intercepting the GCN 196 outbound radial (R-196). Proceed via the GCN R-196 to BISOP intersection at a minimum en-route altitude of 10,000 feet MSL, then via assigned air route. Aircraft can expect filed altitude 10 minutes after departure.

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Exhibit 2.5: Grand Canyon National Park Special Flight Rules Area (SFAR 50-2)- Commercial Air Tour Operations



Source: NOAA/ FAA NACO Grand Canyon VFR Aeronautical Chart, 2004.



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PARKS ONE DEPARTURE: Take-off Runway 21: Climb runway heading until reaching 3 nautical miles southwest of the GCN VOR-DME, the turn left heading 270° until intercepting the GCN 239 outbound radial (R-239). Proceed via GCN R-239 and to Peach Springs (PGS) VORTAC 059 outbound radial (R-059) to PGS VORTAC at a minimum en-route altitude of 10,000 feet MSL, then via assigned air route. Aircraft can expect filed altitude 10 minutes after departure.

Standard Terminal Arrival Routes (STARS)

A STAR is a pre-planned instrument flight rule (IFR) air traffic control arrival procedure published for pilots in graphic and/ or textual format. STARS provide instruction for aircraft transition from the en-route flight environment (ARTCC) to an outer fix or instrument approach fix/ arrival waypoint in the terminal area or local control facility (TRACON/ ATCT). As of the completion of this airport inventory, the Grand Canyon National Park Airport does not have any published STARS to evaluate.

Noise Abatement Procedures

Aside from the Special Flight Rules Area (SRAF 50-2) in effect for dictating flight over the Grand Canyon National Park, there are no additional noise abatement procedures in effect at the GCN.

National Park/ Wilderness/ Wildlife Areas

Table 2.21 inventories the regional national park and wilderness/ wildlife area located within a 75 mile radius of the Grand Canyon National Park Airport.

*Table 2.21
National Park, Wilderness and Wildlife Area Inventory
Grand Canyon National Park Airport*

Park/ Wildlife Area Description	Location	Acreage/ Size	Year Established
Kaibab National Forest	n/a	1,600,000 Acres	1934
Grand Canyon National Park	3 Miles N	1,218,375 Acres	February 1919
Saddle Mountain Wilderness Area	34 Miles N	40,539 Acres	1984
Kendrick Mountain Wilderness Area	45 Miles SE	6,510 Acres	1984
Kanab Creek Wilderness Area	53 Miles NNW	70,460 Acres	1984
Kachina Peaks Wilderness Area	55 Miles SE	18,616 Acres	1984
Wupatki National Monument	55 Miles SE	n/a	December 1924
Strawberry Crater Wilderness Area	57 Miles SE	10,743 Acres	1984
Sunset Crater Volcano National Monument	58 Miles SE	n/a	May 1930/ 1990
Paria Canyon- Vermillion Cliffs Wilderness Area/ National Monument	69 Miles N	109,400 Acres	1984
Mount Logan Wilderness Area	68 Miles NW	14,650 Acres	1984
Mount Trumbull Wilderness Area	70 Miles NW	7,880 Acres	n/a

Source: United States Department of the Interior, March 2003.

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Socioeconomic Factors

Population, employment and income data has been collected to understand and evaluate current socio-economic conditions in The State of Arizona, Coconino County, as well as the community of Tusayan that will assist in making assumptions and projections about the future level of aviation demand activity at the Grand Canyon National Park Airport.

Population

Of the 15 counties that comprise the State of Arizona's total population, Coconino County ranks as the seventh most populous county having approximately 123,329 residents, according to the 2000 Census. Tusayan, located in northern Coconino County bordering the Grand Canyon, was reported as having 680 local residents at the time of the 2000 Census, representing approximately one percent of the overall county population. Since the 1990 Census, the population of Tusayan has increased by nearly 50 percent. Coconino County, whose population has increased approximately 27 percent since the 1990 Census, has seen its population ratio decrease when compared to State's 34 percent increase in population. According to the 2000 Census, the fastest growing segment of the County population consists of residents aged 35-44 years of age while the fastest growing segment of Tusayan population consists of residents aged 25-34 years of age. **Table 2.22** outlines historic and future population trends for Tusayan, Coconino County, and the State of Arizona.

Table 2.22
Historic and Forecast Population Levels
Grand Canyon National Park Airport

Year	Tusayan Population	Coconino County Population	State of Arizona Population	Tusayan to Coconino County Population Ratio	Coconino County to State Population Ratio
Historic Population Estimates					
1990	456	97,106	3,684,097	0.46%	2.6%
1995	568	110,954	4,432,499	0.51%	2.5%
2000	680	123,329	4,961,953	0.55%	2.4%
Forecast Population Levels					
2005	766	135,595	5,553,849	0.55%	2.4%
2010	819	147,352	6,145,108	0.55%	2.3%
2015	851	158,753	6,744,754	0.55%	2.3%
2020	890	169,343	7,363,604	0.52%	2.3%
2025	938	179,555	7,993,039	0.52%	2.2%

Note: Population estimates and projections based upon information approved by the AZ DES Director in August 1997.

Source: Arizona Department of Economic Security (DES), Research Administration, Population Statistics Unit, 2003.

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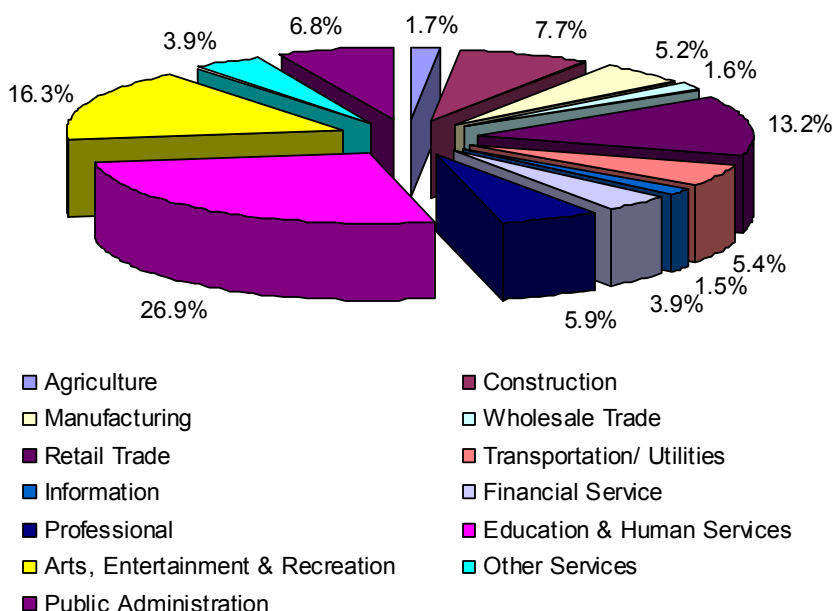
Employment/Earnings by Industry

The utilization of employment and industry workforce information assists in identifying recent trends and patterns related to major shifts in industries at the County and local level and are one measure of a community's economic vitality and stability. Employment and industry workforce information is primarily utilized as a gauge to determine the economic stability of the area which correlates to an expected reliance on airport and aviation activity and demand.

Coconino County

Based on 2000 Census data, Coconino County supports an employed civilian population of 16 years and over that numbers approximately 55,500 residents. Management and professional services, as well as sales and office occupations, are among the most prevalent within the County. With regard to industries that employ the workforce within Coconino County, education and human services, arts/ entertainment and recreation, retail trade, construction, and manufacturing are among the most prosperous industries, accounting for nearly 69 percent of the industrial workforce. Agricultural, as well as wholesale trade and information services occupations and industries are among the lowest of the County-wide workforce.

Coconino County Workforce by Industry (2000)



Source: U.S. Department of Commerce, Bureau of the Censes, Profile of Coconino County Economic Characteristics, 2000.

The Coconino County labor force classification of workers includes 64.6 percent of the labor force who are compensated by private and salaried wages, 28.0 percent of the work force are classified as government workers, approximately seven percent of the work force

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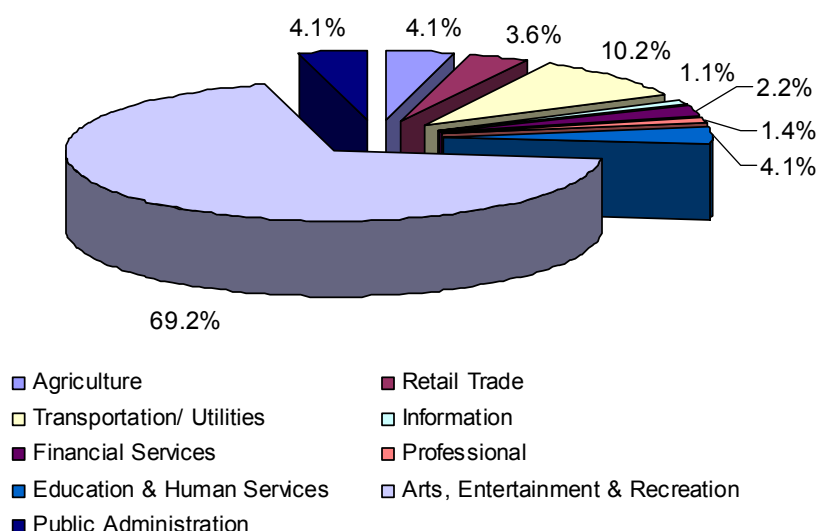
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are self-employed, while the remaining labor force is classified as unpaid family workers. In addition, according to the 2000 Census, the unemployment rate in Coconino County hovered within the 4.0 to 5.0 percent range accounting for approximately 4,100 out of work residents.

Community of Tusayan

Based on 2000 Census data, the community of Tusayan supports an employed civilian population of 16 years and over that numbers approximately 362 residents. Service, management, sales, and transportation occupations are among the most prevalent within the community due largely to the close proximity of the Grand Canyon National Park, as well as the Grand Canyon being a center for tourism. With regard to industries that employ the workforce within Tusayan, arts, entertainment and recreation, as well as transportation, are among the most prosperous industries, accounting for nearly 79 percent of the industrial workforce. Agricultural, construction, professional and information services occupations and industries are among the lowest of the Tusayan workforce.

Community of Tusayan Workforce by Industry (2000)



Source: U.S. Department of Commerce, Bureau of the Censes, Profile of Coconino County Economic Characteristics, 2000.

The community of Tusayan labor force classification of workers includes 81.2 percent of the labor force who are compensated by private and salaried wages, 17.7 percent of the work force are classified as government workers, and approximately one percent of the workforce is self-employed. In addition, according to the 2000 Census, the unemployment rate in Tusayan hovered within the 6.5 percent range accounting for approximately 26 out of work residents.

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Per Capita Personal Income (PCI)

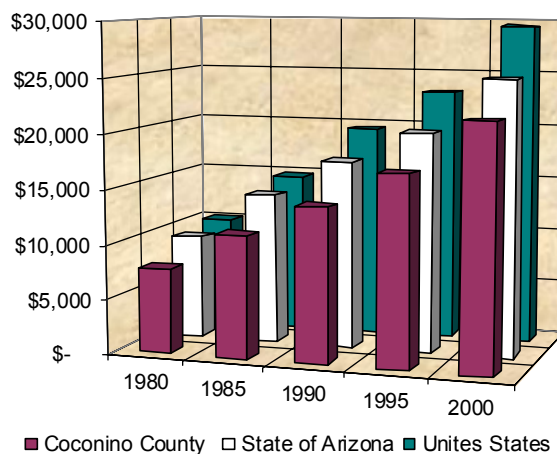
As the population of Coconino County continues to rise, so, too, does the per capita income (PCI). The PCI index for Coconino County has nearly doubled during the past two decades indicating a sustained influx of economic stimulus and financial growth within the County. The Coconino County PCI experienced an annual growth rate of approximately nine percent during that same time period. When compared to the State PCI, Coconino County's PCI has experienced a 0.3 percent annual growth ratio. In conclusion, Coconino County PCI ranks 3rd in the state following Maricopa and Pima Counties and is within the 87 percentile of the State average and within the 74 percentile of the National average. **Table 2.23** depicts the actual and percent change of the PCI for Coconino County, the State of Arizona, and the United States dating back to 1980.

Table 2.23
Per Capita Personal Income (PCI)
Grand Canyon National Park Airport

Year	Coconino County PCI	Arizona State PCI	County Percent of State (PCI)	United States PCI	County Percent of United States (PCI)
1980	\$7,802	\$9,590	81.3%	\$10,183	76.6%
1985	\$11,081	\$13,808	80.2%	\$14,705	75.3%
1990	\$14,040	\$17,187	81.6%	\$19,572	71.7%
1995	\$17,177	\$20,050	85.6%	\$23,255	73.8%
2000	\$21,918	\$24,988	87.7%	\$29,469	74.3%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, 2003.

Per Capita Personal Income (PCI) Summary



Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, 2003.

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Income Distribution

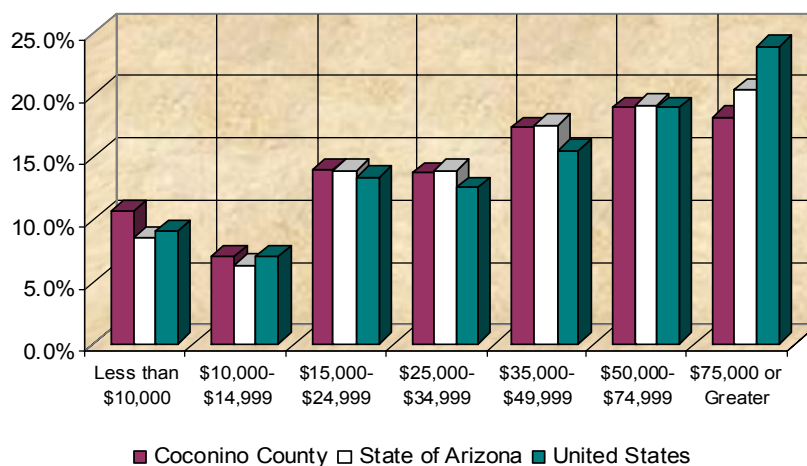
Table 2.24 displays the distribution of household income for Coconino County, the State of Arizona, and the United States. Using income as a gauge of economic stability, it is assumed that approximately 54 percent of the County households earn income of \$35,000 or more, and are considered capable of generating disposable income necessary to support or utilize general aviation and commercial service aviation activities. This contention is based on the presumption that, as annual household salary increases, so does the likelihood of an individual flying for business, private or recreational purposes.

Table 2.24
Household Income Distribution Information
Grand Canyon National Park Airport

Locale	Less Than \$10,000	\$10,000-\$14,999	\$15,000-\$24,999	\$25,000-\$34,999	\$35,000-\$49,999	\$50,000-\$74,999	\$75,000 +	Percent Above \$35,000
Coconino County	10.6%	7.0%	14.0%	13.7%	17.3%	18.9%	18.2%	54.4%
State of Arizona	8.5%	6.3%	13.9%	13.9%	17.5%	19.1%	20.4%	57.0%
United States	9.0%	7.0%	13.4%	12.5%	15.5%	18.9%	23.8%	58.2%

Source: U.S. Department of Commerce, Bureau of the Census, Demographic Profile(s), 2003.

Household Income Distribution Summary (2000)



Source: U.S. Department of Commerce, Bureau of the Census, Demographic Profile(s), 2003.

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Land Use Planning

As the second largest county in the United States, Coconino County's land area totals approximately 11,877,000 acres. A mere 14 percent of the land is in private ownership, while the remaining land area is owned or controlled by the U.S. Forest Service, Bureau of Land Management, State of Arizona, various Indian Tribal Reservations, National Park Service, Department of Defense, and the Bureau of Reclamation, accounting for nearly 10,187,000 acres of publicly owned land.

Of the nearly 123,300 residents of Coconino County, approximately 20 percent reside within Indian Reservations, 54 percent live within the incorporated areas, 1.5 percent live on National Park Service lands, while the remaining 24.5 percent reside within the unincorporated area of the County and on private lands.

The adopted Coconino County Comprehensive Plan (2003), as well as the Tusayan Area Plan (1995), both completed by the Coconino County Community Development Department, are two jurisdictional land use plans that will potentially impact the future capital development at the Grand Canyon National Park Airport.

Refer to the *Land Use Drawing* included as part of the ALP set of drawings included in Chapter 7, *Airport Plan Drawings*, to view the land uses in the immediate vicinity of the airport.

Coconino County Comprehensive Plan

With regard to land use categories, the Coconino County Comprehensive Plan identifies agricultural, residential, commercial, industrial, mining, and open space, as well as special considerations land uses to be categorized within the County.

Agricultural: This land use accounts for nearly all of the public land within Coconino County utilized predominantly for cattle grazing except for land area under the jurisdiction of the National Park Service.

Residential: Residential uses are divided into Agricultural- Residential (rural county, minimum lot size is 1 to 10 acres, one residence per parcel); Residential Single Family (no mobile homes, 5,000 square feet to 5 acres); Multiple Family Residential (confined primarily to incorporated municipalities); Mobile Home Parks (likely located within incorporated municipalities).

Commercial: Located on or near state highways and categorized as Neighborhood Commercial (convenience markets, gasoline sales, restaurants, and light retail); Tourist Commercial (recreational facilities, motels, campgrounds, gift shops); and Heavy Commercial (located within incorporated municipalities and include shopping centers and malls).

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Industrial: Mostly located within incorporated municipalities due to access to utilities; may be compatible with Residential uses if adequate buffers and protections are present.

Mining: Confined primarily to public and private cinder pit throughout the County, sandstone quarries, and inactive uranium sites north of the Grand Canyon and confined to Federally controlled land.

Open Space and Recreation: Primarily off-reservation portion of Coconino County controlled by the U.S. Forest Service, National Park Service, Bureau of Land Management, and the Arizona State Land Department.

Aside from conventional land uses, there are particular geographic areas of special concern warranting attention particularly with regard to land uses and future development in close proximity to those areas. Briefly, these additional uses include Resource Areas (National Parks, Monuments, and Wildlife/ Wilderness areas); Historical and Cultural Resources (archeological areas); Astronomical Observatories (Lowell Observatory located in Flagstaff); and Impact Zones (airports, railroads, power lines and pipelines).

Tusayan Area Plan

Adopted in 1995, the Tusayan Area Plan included a 70 square mile study area which encompassed portions of the Grand Canyon National Park, the Kaibab National Forest, as well as the Grand Canyon National Park Airport. Within the study area, nearly 96 percent of the land is administered by the National Park Service, as well as the U.S. Forest Service, while two percent is owned by the Arizona Department of Transportation. The remaining two percent of land is privately owned.

The Tusayan Area Plan discusses the existing land uses within the study area, all of which are similar to the land use designations contained and defined within the Coconino County Comprehensive Plan. The following discussion will identify the land uses within the vicinity of Tusayan and the Grand Canyon National Park Airport.

Agricultural: Given the recreational/ tourism industry prevalent in the vicinity of Tusayan and the Airport, Agricultural land uses are not identified within the immediate study area.

Residential: Four mobile home parks - South Rim Trailer Park, Halvorson Trailer Park, Canyon Pines Mobile Home Park, as well as the Camper Village RV Park - are located within the Tusayan community, classifying these areas as Mobile Home use being zoned as Manufactured Home Park (MHP). Five (5) Multiple Family Residential developments are located to the east and west of State Highway 64. Lastly, there are approximately eight (8) to 12 Residential- Single Family dwellings located within the community of

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Tusayan. Both developments and dwellings are zoned as Residential and Manufacture Home (RMH).

Commercial: The land use designation located to the east of State Highway 64 is primarily Neighborhood Commercial and Tourism Commercial. The land use located to the west of Highway 64 is primarily Heavy Commercial with one resort being located to the east of Highway 64. Both the east and west land use areas are utilized for Heavy Commercial as well, and both are being zoned Resort Commercial (RC).

Industrial: The Tusayan Public Utility District is located to the immediate west of the community being zoned for Industrial use and is contained within approximately eight (8) acres of land.

Mining: There are no Mining land uses or zoning located within the community of Tusayan.

Open Space and Recreation: The community of Tusayan and the Grand Canyon National Park Airport are located within the Kaibab National Forest (U.S. Forest Service) where the land use is designated Open Space and Recreation. The land north of the Kaibab National Forest is under the jurisdiction of the U.S. Park Service and is also Open Space and Recreation land use. All areas of the Park and National Forest are zoned as Open Space and Conservation (OS).

Institutional Land Uses: The Grand Canyon Unified School District (GCUSD) is in negotiations to potentially acquire approximately 80 acres of land from the National Forest Service (NFS) located to the immediate northwest of the airport property boundary. This acreage would be utilized to develop a state-of-the-art educational campus including academic, residential, administrative and sports facilities for the GCUSD students, teachers and administrative personnel.

Airport Zoning/ Overlay Districts

According to the Coconino County Comprehensive Plan and the Tusayan Area Plan, and following a review of the Coconino County Zoning Ordinance, adopted August 1981, and effective September 1981, there are no airport zoning ordinances protecting off-airport land use or overlay districts based on FAR Part 77, *Imaginary Airspace Surfaces* for the Grand Canyon National Park Airport.

GCN has not filed an Airport Disclosure Map with the Arizona Department of Real Estate (ADRE) nor does an Airport Influence Area map exist for the airport as defined in FAO 7200. 2E, Chapter 10, Figure 10-3-4.

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Climatic Characteristics

Climatic characteristics are utilized in determining runway dimensional requirements, crosswind runway wind coverage, navigational and lighting aids to accommodate instrument approaches, as well as the necessary snow removal and airport maintenance equipment needed to cope with varying weather occurrences. Aviation activity during instrument meteorological conditions (IMC) provides an indication as to regional weather occurrences, and is expressed as the percent of time visibility is impaired due to cloud coverage, low visibility and inclement weather and is useful in determining the need for local navigational facilities and instrument approach aids based on airport design criteria.

Geological Setting/Topographic Features

The Grand Canyon National Park, as well as the remainder of northern Arizona, is located within the Colorado Drainage Basin. The Grand Canyon, extending southwestward some 217 miles from the junction of the Little Colorado River, varies in width from four to 18 miles while the depth from the rim of the Canyon to the river bed ranges between 2,700 feet to as much as 5,700 feet. The Kaibab Plateau, located just north of the Grand Canyon, is indicative of the topography of northern Arizona, averaging between 5,000, 7,000 and some instances as high as 9,000 feet above MSL.

The soil composition of the Grand Canyon National Park consists of deep, gravelly, or cobbly loamy to clayey soils situated on limestone and calcareous sandstone with two to 30 percent sloping surfaces. The soil association- Soldier-Hogg association- consists of thin, grayish brown sandy loam surfaces and brown, grading to reddish brown and yellowish red, clay subsoils. Vegetation in the area is moderately open woodland consisting predominately of ponderosa pine, Douglas and white fir, aspen pine, Gambel oak, juniper, and pinion pine. Understory grasses are mountain muhly, Arizona fescue, pine dropseed, blue grama and dropseeds.

Climate Analysis

The Grand Canyon National Park, as well as the remainder of northern Arizona, is representative of an arid or semiarid climate (low relative humidity and high percentage of sunshine) and experiences cold Canadian air masses that penetrate the high plateau and mountainous regions of the State with the average minimum temperature during the winter months (October to May) ranging from 17 to 35 degrees F. During the remainder of the year, the pine clad forests and high plateau regions of the state experience daily temperatures exceeding 80 degrees F., while the mean maximum temperature for the same time period is 84 degrees F. occurring during the month of July.

Annual rain fall precipitation totals approximately 17 inches with March observing the greatest monthly rain amounts averaging 2.17 inches. Annual average snow fall totals approximately 46 inches with the heaviest snow fall amounts occurring in the month of January with as much as 10.5 inches of snow. Average snow depth amounts within the Grand Canyon measure approximately one to three inches. The Grand Canyon region

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averages 129 days of precipitation per year with rain fall amounts greater than 0.5 inches occurring only 11 days per year.

Airport Wind Analysis

Area wind characteristics were collected and analyzed to determine the impacts of all-weather and instrument meteorological conditions on the existing runway configuration. Wind observation data was obtained from the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), as reported hourly at the Grand Canyon National Park Airport during the period from 1993 to 2002. Combined, the recorded wind data included 70,162 all-weather, and 2,189 instrument meteorological condition observations.

Wind coverage, expressed as a percent of time below an acceptable velocity, is the resulting component of wind speed and relative direction acting at right or acute angles to the runway. For planning standards, the desirable wind coverage is 95 percent for the primary runway, and is computed based on the crosswind component not exceeding 10.5-knots for ARC A-I and B-I category aircraft, 13.0-knots for ARC A-II to B-II aircraft, 16.0 knots for ARC A-III, B-III and C-I to D-III, and ARC A-IV to D-IV general aviation aircraft. By design, a small aircraft (weighing less than 12,500 pounds) is recommended to be able to operate approximately 95 percent of a given period without experiencing a crosswind component greater than 10.5-knots.

All-Weather Wind Conditions

Table 2.25 illustrates the percent of all-weather wind coverage for the 10.5, 13.0, 16.0 and 20.0-knot wind velocities. Runway 3-21 provides 98.59 percent wind coverage at 10.5-knots for ARC A-I and B-I aircraft and 99.9 percent wind coverage for ARC C-I to D-III aircraft. Based on the prevailing wind patterns and wind coverage accommodated by the Runway 3-21 alignment, planning considerations regarding a crosswind runway are not necessary and do not require further analysis.

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Instrument Flight Rule (IFR) Wind Conditions

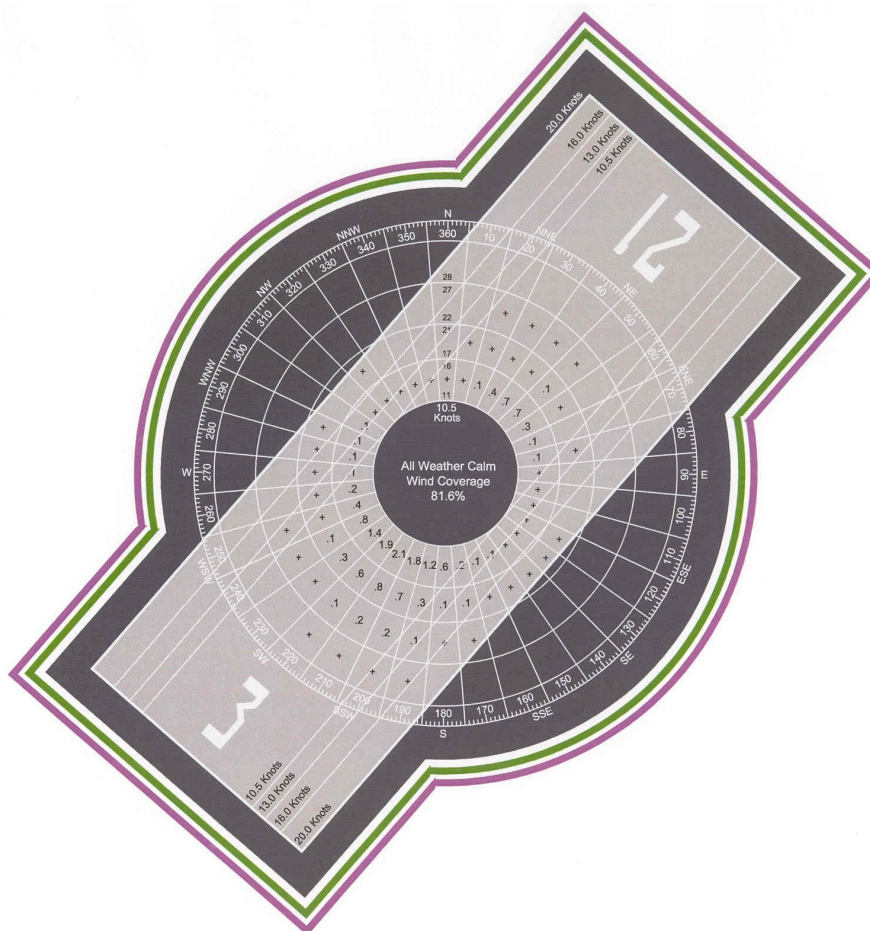
Table 2.25 also illustrates the percent wind coverage during IMC/ IFR conditions. Similarly, Runway 3-21 provides 98.86 percent wind coverage during IMC/ IFR conditions and 99.96 percent wind coverage for ARC C-I to D-III aircraft.

Table 2.25

*Percent Primary Runway Wind Coverage for All-Weather and IFR Wind Conditions
Grand Canyon National Park Airport*

Runway Alignment (True Bearing)	Crosswind Component Wind Speed & Corresponding ARC	Percent All-Weather Wind Coverage	Percent IFR/ IMC Wind Coverage
Runway 3-21 (40.65°)	10.5 knots (A-I and B-I)	98.61%	98.86%
	13.0 knots (A-II and B-II)	99.46%	99.68%
	16.0 knots (A-III; B-III, C-I to D-III)	99.92%	99.96%
	20.0 knots (A-IV to D-IV)	99.99%	100.0%
Total Calm and Light Winds (0-10.5 knots)		81.6%	
Total Strong Winds (Greater than 10.5 knots)		18.3%	
Optimum All-Weather Primary Runway Alignment		34.0° (98.83% at 10.5-knots)	

Source: National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center (NCDC), Asheville, N.C.; Grand Canyon National Park Airport (1993-2002).



Grand Canyon National Park Airport

Grand Canyon, Arizona

Airport Management Structure

The Arizona Department of Transportation, Aeronautics Division, formed in 1974, is organized and operates according to specific lines of responsibility. Providing the overall direction of the Division's efforts, the Division Director is the head of the Aeronautics Division management team that plans, establishes and implements the policies and procedures of the ADOT Aeronautics Division. The Aeronautics management team consists of a four member panel that is responsible for the following aviation doctrine:

Division Director: Headquartered in the City of Phoenix, is charged with encouraging and advancing the safe and orderly development of aviation in the state; assemble and distribute aviation related information; represent the state on issues involving commercial air carrier traffic and activity; administer federal and other funding for statewide airport and navigational aid development; ensure the Grand Canyon National Park Airport is properly maintained and managed; license and register aircraft and aircraft dealers within the state; and advise on aviation-related policy issues and legislation.

Airport Development Program Administrator: Headquartered in the City of Phoenix and responsible for statewide airport development, airport and aviation planning, and administration of Air Service programs. In addition, the Airport Development Program Administrator supervises a staff of one aviation program analyst, state airport engineer, two airport program managers, and an aviation policy analyst.

Aviation Services Program Administrator: Headquartered in the City of Phoenix and responsible for aviation revenue/ aircraft registration, aviation safety and education, administration, fiscal management, legislative and legal affairs, as well as the Airports Loan Program. In addition, the Aviation Services Program Administrator supervises a staff of nine (9) individuals including revenue and tax personnel, safety and education field representative, as well as an office manager and administrative support personnel.

Grand Canyon National Park Airport Manager: Headquartered at the Grand Canyon National Park Airport and reports directly to the Division Director and ensures that the Airport is managed in a safe and efficient manner and ensures airport compliance with Title 14 CFR, Part 139 and the Airport Certification Manual (ACM). The GCN Airport Manager supervises a staff of two (2) administrative personnel, 12 operations and maintenance personnel, and seven (7) ARFF personnel.



Grand Canyon National Park Airport

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Airport Minimum Standards

Airport Minimum Standards are intended to provide the threshold entry level requirements for those facilities wishing to provide commercial aeronautical services to the public at a specific airport. Minimum standards are recommended to be established based on the specific conditions at the airport, with consideration being given to the existing and planned facilities at the airport, as well as the current and aviation role of the airport. In conclusion, Minimum Standards establish the minimum requirements to be met by the individual, air carrier, and airport as a condition for the privilege of establishing and conducting commercial aviation service at an airport.

The Grand Canyon National Park Airport has established Airport Minimum Standards which are contained within the Arizona Administrative Code, Title 17, Transportation, Chapter 2, Sections 202-206. It should be noted that the current minimum standards will be evaluated and a new set of standards will be developed as part of this master plan update.

Airport Operating Procedures

The Grand Canyon National Park Airport has published airport operating procedures that can be referenced within the Grand Canyon National Park Airport Policy Manual, August 2002, Chapter IV. The GCN operating procedures include information regarding the airport operating hours, personnel, communications capabilities, as well as mutual aid Federal and State law enforcement and emergency medical response agencies. Additionally, step-by-step policies and procedures for airside and landside operations to be performed by GCN staff are provided including terminal building opening guidelines, daily and regularly scheduled airfield inspections, daily ARFF duties and responsibilities, janitorial activities and responsibilities, as well as closing/ end of shift activities and duties.

Emergency Rescue Grid Map

The Grand Canyon National Park Airport has a published Emergency Rescue Grid Map, FAA approved December 1995, depicting the existing facilities at the Airport including the perimeter/ security fence line, access gate location and designations, as well as a quadrant grid map for rapid response in the case of an airport emergency. The Airport Emergency Rescue Grid Map can be referenced within the Grand Canyon National Park Airport Certification Manual, Chapter III, which was approved by the FAA in February 2001.

Airport Emergency/ Security Plan

The Grand Canyon National Park Airport does have a published Airport Emergency/ Security Plan (AEP) detailing and outlining emergency information such as emergency telephone numbers, airport administration contact information, procedures for specific types and levels of emergencies including aircraft mishaps/ accidents, natural disasters, structural and non-structural fires, power failures and air piracy. Additional information provided in the AEP includes information and procedures for medical services, coordination of airport and air traffic control and functions, as well as airport personnel/ emergency training program requirements.



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The Grand Canyon National Park Airport Emergency/ Security Plan (AEP) can be referenced within the Grand Canyon National Park Airport Certification Manual, Chapter XII, which was approved by the FAA in February 2001.

Arizona Airport Pavement Preservation Program

The Arizona Airport Pavement Preservation Program's (APPP) basic premise is to protect the millions of dollars that have been invested by public and private users alike in the Arizona system of airports. The APPP, a five-year pavement maintenance program, was established to create an airport pavement preservation program that would assist and ensure the preservation of the Arizona airport system infrastructure.

The Arizona Airport Pavement Management System (APMS), in cooperation with the U.S. Army Corp of Engineers' 'Micropaver' program, creates a five-year APPP for those airports that request Federal AIP funding grants for pavement rehabilitation and reconstruction and utilize the APMS, as well as conduct monthly physical pavement evaluations and inspections. GCN participates in the ADOT, Aeronautics Division APMS and APPP.

Airport Master Record (FAA Form 5010)

The FAA 5010 Form for GCN was reviewed for accuracy and pertinent information regarding services, facilities, operational activity and runway data appear to be accurate.

Airport Self-Inspection/ Condition Reporting Program

CFR, Title 14, Chapter 1, Part 139, Section 139.327 establishes safety standards within the movement area of the airport and requires that self-inspections be conducted to monitor compliance with established Part 139 and ACM/ ACS standards. The self inspections generally involve two inspections each day to cover both day and nighttime airfield conditions.

CFR, Title 14, Chapter 1, Part 139, Section 139.339 establishes airport condition reporting standards for airport sponsors requiring timely notification of airport users and the FAA should any condition exist at the airport that adversely affects operational safety or in instances where the airport is not able to remain compliant according to provisions of Part 139 or the ACM/ ACS.

The Grand Canyon National Park Airport, according to the Grand Canyon National Park Airport Certification Manual, Chapter XIII, *Procedures for Self-Inspection Program*, outlines guidelines and procedures for maintaining mandated Part 139 compliance. An example of the airport's Airfield Safety Inspection Checklist can be referenced in Figure 2 of the Appendix of the Grand Canyon National Park Airport ACM. Additionally, according to the Grand Canyon National Park Airport Certification Manual, Chapter XIX, *Procedures for Airport Condition Reporting*, outlines local airfield conditions that require reporting, as well as procedures to correct non-compliant condition(s). An example of the airport's Field Condition Report can be referenced in Figure 6 of the Appendix of the Grand Canyon National Park Airport ACM.



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Chapter XIII, *Procedures for Self-Inspection Program* and Chapter XIX, *Procedures for Airport Condition Reporting* of the Grand Canyon National Park Airport Certification Manual fulfill the regulatory recommendations of FAA Advisory Circular (AC) 150/ 5200-18B.

Airport Inventory Summary

The information provided in the Airport Inventory Chapter establishes the foundation on which the remaining elements of the Airport Master Plan will be based. Aviation demand forecasts, demand/ capacity analysis, airport facility requirements, airport alternatives analysis, and phased airport development and capital improvement program are phases of the master plan program that will be addressed in subsequent chapters of this master plan project. The Airport Inventory is a crucial element in completing the remainder of the Grand Canyon National Park Airport Master Plan Update.